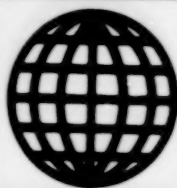


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12 JUNE 1987



**FOREIGN
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JPRS Report

Soviet Union

Economic Affairs

SPECIAL NOTICE

Effective 1 June 1987 JPRS reports will have a new cover design and color, and some reports will have a different title and format. Some of the color changes may be implemented earlier if existing supplies of stock are depleted.

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WEST EUROPE.....	ivory
AFRICA (SUB-SAHARA).....	tan
SCIENCE & TECHNOLOGY.....	gray
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USSR reports will become SOVIET UNION reports.

The USSR REPORT: NATIONAL ECONOMY will be titled SOVIET UNION/ECONOMIC AFFAIRS (UEA).

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The following Soviet journals will be added to those which are already issued in separate series:

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12 JUNE 1987

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PROJECTED STRUCTURAL CHANGES IN ECONOMY CHARACTERIZE 12TH FYP

Moscow PLANOVoye KHOZYAYSTVO in Russian No 1, Jan 87 pp 3-6

[Unattributed article: "The Plan and Structural Changes Within the Economy"]

[Text] The State Plan for National Economic and Socialist Development in 1987, passed by the Sixth Session of the 11th USSR Supreme Soviet, conveys the strategic course of the April 1985 Plenum of the CPSU Central Committee and of the program directives established by the 27th CPSU Congress for accelerated social and economic development and for qualitative changes in the structure of the national economy and in the life of socialist society.

The structural changes within the economy have been evaluated in the Political Report of the CPSU Central Committee to the 27th Party Congress as the most important factor of acceleration. Beginning in the 12th Five-Year Plan structural changes are acquiring a new dimension--behind them are processes which characterize the essence of these changes within the national economy and which signify the flexible restructuring of the economy in accordance with progressive changes in science, technological processes, technology and public and individual needs.

The solution to these tasks is based first and foremost on qualitative changes in the industrial base of public production, on the development of the most important national economic complexes and on the improvement of the structure of capital investments and the strengthening of the social direction of plans.

The structural changes that are taking place in the development of the economy and social policy comprise one of the special characteristics of the 12th Five-Year Plan as the stage during which the economy of the USSR was brought up to a higher level of development--the level of acceleration. First of all this refers to the active application of the achievements of scientific-technical progress, to the accelerated technical renovation of the production apparatus and in connection with this, to the change in the structure of capital investments integral to the five-year plan with a general growth in the proportion of the savings fund within national income.

The decisive factor in intensification involves securing the new quality of investments being made. This in turn is related to the priority development

of machine building and especially of its branches, which determine the pace of technical progress. All other processes of structural policy that are no less important in economic terms depend on the development of the machine-building complex.

The main directions of the structural policy have been determined by the decisions of the 27th CPSU Congress. Resources will be invested first into the automation and electronization of the national economy, into production and the use of new materials and into the development of atomic energy and biotechnology. At the same time this presupposes the rapid development of those types of machine building which are called upon to provide these branches with effective technology.

In the USSR total production of industrial robots equalled 40,000 in 1981-1985. During the current five-year plan the output of robot technology will grow, but there is increased attention to the complexities of utilizing the resources of automatization while increasing their qualitative features. At the same time, in 1987 there will be acceleration of production of processing centers, flexible production systems and rotor and rotor-conveyor lines.

Electronics is that section of structural changes in which it is essential to make the most thorough breakthrough and in which lags behind the leading foreign producers are most significant.

Meanwhile, the economic significance and economic "price" of information and the means and methods of processing it as an essential element of decision-making in the areas of technology, production and economics are growing ceaselessly. The development of automated systems for measuring and controlling production quality using computer technology is the most important task today, at a time when the question of quality has become the most important one in the party's economic work.

Changes in the direction of electronization of the national economy indicated both in the five-year and annual plans foresees the accelerated development of electronics along the entire front--from the development of a new generation of a microelectronic component base to the mass manufacture of personal computers and school computers and the extensive introduction of microprocessor technology. The output of computer technology devices will increase by 19.5 percent in 1987. We plan to considerably increase the outfitting of machines and equipment with electronic controls, including microprocessors. The proportion of equipment outfitted with these devices within total output of machine-building products will increase fivefold to sixfold by the end of the five-year plan as compared to 1985. For some types of products of energy and agricultural machine building and instrument making, the proportion of such equipment will increase to 70 percent.

The 12th Five-Year Plan foresees the development and assimilation of manufacturing of economic and effective types of construction materials from plastics, chemical resins, ceramic clays, metallic powders and other materials. The development of new materials on the basis of modern technology will provide the opportunity to increase the dependability of the work equipment being produced and to economize on material resources. In machine

building and construction all the growth in the demand for rolled products of ferrous metals, cement and timber materials is to be met by means of economy and a decrease in losses. The 1987 plan has determined that by economizing it will be possible to fully meet the entire growth in demand for ferrous metals and timber materials, and in the case of cement--by 75 percent.

The basic direction in structural changes within branches of the metallurgical complex includes the development and dissemination of progressive technologies on the basis of native machine building, jointly with machine builders of other CEMA [Council of Mutual Economic Aid] countries. At the present time an extensive program is being implemented to renew fixed capital in ferrous metallurgy, which supplies the national economy with metal--the most important and most large-tonnage type of construction material today. Without a sharp improvement in the quality of metallurgical products, without the complete correspondence of its nomenclature with today's and tomorrow's needs it is impossible to have a radical change in the development of machine building, construction and other spheres of the economy. Changes in this direction are already being made. Improving the structure of production of ferrous metallurgy will achieve a savings of 2.4 million tons in 1987. On the whole the planned decrease in the metal portion of national income will allow us to save 6.3 million tons of metal.

Serious structural changes must be made in the country's fuel-energy complex. While increasing the production of all types of fuel in 1987, the gas industry will develop at a forestalling pace, with a growth pace of almost 6 percent. Growth in gas recovery will occur primarily at the Yamburgskoye deposit. The forestalling development of coal mining using the open method will continue. The production of petroleum, including gas condensate, will equal 617 million tons. Extensive measures are planned for developing new deposit sites in Western Siberia and for the accelerated development of the Caspian Petroleum-Procurement Complex. It is planned to considerably improve the use of petroleum raw materials, primarily by means of thorough processing. As a result, the same quantity of petroleum should yield about 7 million tons of additional petroleum products.

The production of electrical energy is planned at 1.665 billion kilowatt-hours, or 3.7 percent more than in 1986.

The country's agro-industrial complex will be developed further. In 1986 gross grain yield equalled approximately 210 million tons (almost 30 million tons more than the average annual volume of production during the 11th Five-Year Plan). In 1987 about 56 billion rubles of capital investments are being allocated in the state plan for the development of the APK [Agro-industrial complex]. An extensive system of measures related to the introduction of intensive technologies in farming and animal raising is planned.

Structural changes within the APK are related to the radical strengthening of agricultural machine building and of the processing branches of the agro-industrial complex. Today one of our urgent national economic tasks is to raise the potential of agricultural machine building from the point of view of the ability of the branch to provide a system of machines for the effective cultivation of agricultural crops; moreover, the machines must be of a high

technical level as concerns productivity, economy and dependability. Our country produces an adequate quantity of agricultural technology but many machines wear out quickly and break down. In this way the pace of improving the work of the agro-industrial complex today is first and foremost determined by the quality of growth of agricultural machine building.

The production base of the processing industry will be subject to forestalling development within the structure of the agro-industrial complex. Capital investments for this purpose during the years of the five-year plan will increase by a factor of 1.5, including into the food industry--by a factor of 1.6, and into the meat and dairy industry--by a factor of 1.8. The 1987 plan calls for increasing the proportion of complex technological equipment for the food, meat and dairy, and fish industries in general to 36 percent of total production.

A characteristic feature of the restructuring of the USSR's economy is the fact that it is integrally related to strengthening the social direction of plans.

In 1987 about three-fourths of the growth in national income is being directed into improving the well-being of the people. We foresee the implementation of a complex of measures that encompass all aspects of the lives of Soviet people and accelerated problem-solving with regard to important social problems as compared to the assignments of the five-year plan. Centralized measures will be implemented with regard to improving wages and increasing salaries for different categories of workers and employees based on the work results of each collective, to strengthening state aid to families with children, to improving the upkeep and education of the upcoming generation and to providing social security for workers.

Special attention has been focused on increasing the production of consumer goods and services for the population. The task has been set to organize the production of goods and the rendering of services in all associations and enterprises regardless of their specialization, to increase the output of goods in the assortment according to orders from trade organizations, and to improve firm services.

The output of cultural and general and household goods will increase by 12 percent in 1987, and the total volume of paid services--by 9.5 percent, which will surpass the tasks of the five-year plan. Moreover, the plan dealing with paid services encompasses many enterprises and organizations which previously did not specialize in providing services.

The most important structural change within the social sphere is the growing pace of housing construction. As we know, the quota for the introduction into operation of a total housing area from all sources, as indicated by the 27th CPSU Congress in the five-year plan, was increased. The Basic Directions of Economic and Social Development of the USSR in 1986-1990 called for the construction of housing with a total area of 565-570 million square meters of space, and the five-year plan for 1986-1990--already 595 million square meters. The annual plan for 1987 calls for introducing 126.2 million square meters of housing, which is much more than foreseen by the five-year plan for

this period, and it surpasses the average annual introduction into operation of housing during the past five-year plan by 15.8 million square meters. From this we can see the high priority that is being placed on solving the housing problem in plans of social development, and housing construction is strengthening its role more and more as a long-term factor and indicator of economic growth.

Structural reorganization and its pace and direction are integrally related to improving production quality. The question of quality is not just an economic but a political one as well. "In essence," noted M. S. Gorbachev at a meeting of the CPSU Central Committee on 14 November 1986, "we are talking about a problem of great social and economic significance because production quality sums up the work results of all branches of the economy. We are talking about the fact that these products are directed into the national economy and determine its technical level; they determine the everyday living conditions of people as well as their attitude to all processes which are occurring in the country."¹

Low quality production brings great losses to the national economy, is a hindrance to the country's economic development and has a negative effect on the implementation of the program to further raise the living standard of the Soviet people as proposed by the 27th CPSU Congress. With the goal of creating a dependable barrier to defective products, of avoiding the inclusion of poor-quality articles within the trade network and of satisfying the needs of the people, the state reception of products has been organized. The organs of state procurement have been given the right to not ship products out if they were produced in violation of GOST, technical specifications, and the requirements of design and technological documentation. Here these organs are called upon to assist in eliminating the reasons for low production quality and in strengthening technological discipline.

The 1987 plan establishes great tasks. Its fulfillment is directly related to the new principles and approaches to dealing with economic and social problems.

The implementation of the plan's tasks for 1987, the anniversary year in the history of the Soviet state, requires the mobilization of efforts by workers, an improvement in purpose in the work of planning and economic organs with regard to achieving the necessary conditions for highly productive labor in each enterprise and in every work place, the development of socialist competition to worthily greet the 70th anniversary of Great October.

FOOTNOTES

1. PRAVDA, 1986, 16 November.

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QUICK INDUSTRIAL NORMS REVISION TO MEET NEW GOALS URGED

Moscow PLANOVoye KHOZYAYSTVO in Russian No 1, Jan 87 pp 23-34

[Article by Z. Korovina, department chairman of the UkSSR Academy of Sciences Institute of Industrial Economics, doctor of economics, professor: "Changes in the Planning System (Using Up-To-Date Norms as the Foundation of Economic Activity: Norms presented in order they were discussed"; material appearing between slantlines was highlighted in original]

[Text] Currently, well thought out economic norms are becoming more and more important, both for the economic planning system and for economic activity as a whole. The planning and use of up-to-date standards and norms represent one of the most important problems that need to be solved before the economy can be reformed, the dependency of economic organizations on subsidies ceases, and new techniques of managing the economy can be implemented.

Industry in the USSR has a considerable amount of experience in planning and using standards and norms. They are particularly widely used to determine raw and other materials and energy needs, and take the form of unit (for each individual type of raw material or energy) or private (used only for a given enterprise) norms indicating the amount of material or energy used per unit of output. Norms governing the usage of certain types of capital equipment and manpower are also examples of the above. The use of such standards and norms is often called the normative planning technique. This term is improperly used here, since the normative planning technique actually presupposes that a certain output quota has been set for the enterprise as a whole. The norms currently in effect do not permit this for two reasons. First, any product is a complex of between three and several dozen individual types of raw and other materials and forms of energy. At the same time, the given material and energy norms and standards for individual and various groups of products represent varying degrees of difficulty for enterprises, and are thus inadequate to indicate how demanding the plan is in a given situation or how well an organization has performed during a certain reporting period. Second, /current practice is to plan norms and standards for the production environment of each individual enterprise, with a mind to its operational deficiencies and underutilized resources. This means that such standards remain at an average level--one that has already been attained by someone--and do not represent potential very high levels of performance. These standards are unable to generate either the economic environment or sense of personal interestedness

necessary for accelerating the economy, upping performance, undertaking demanding plans, or encouraging fast rates of science- and technology-based growth./

Over the last few years, there have been more and more recommendations that industry begin using cost break-down norms for each enterprise as a whole. These norms would include wages and total cost per ruble of output, as well as normative net output, factory profitability, and others. However, like unit and private norms, these norms are planned for the production environment of a given enterprise producing a certain array of goods. Figures are thus based on past results and are reviewed annually. They are changed systematically through structural adjustments to the overall array of goods, which are produced with varying degrees of profitability, and thus are not planned for high levels of performance, do not reflect the conditions in individual industries, and are short-term in nature.

Norms prescribing high levels of performance must meet certain requirements. /First, it is important that the indicators used for planning the norms be accurate reflections of manufacturing performance and expenses thereon, and that they be free of distortion caused by structural changes./ They should be oriented toward reducing production-cost and encouraging workers and collectives to disregard their previously attained levels of performance and use the most up-to-date equipment, technology, and work design to attain superlative levels. As studies have shown, such norms will not be practical on an extensive basis unless the entire economic apparatus is changed. Specifically, this means that changes must be made in planning techniques, enterprise performance evaluation techniques, and incentive programs.

By analyzing these problems at industrial enterprises in various industries and studying operations over the last few decades, we are led to conclude that /only indicators showing proportionate spending and resource effectiveness per unit of production are appropriate to use as norms in this context./ Included among these indicators are manufacturing cost, which should reflect all the expenses of producing a unit of a given item, and the amounts of /material, energy, labor, and money/ involved in individual elements of the production process.

The best way to accomplish the changeover to an economic system based on minimizing costs is to use the latest per unit manufacturing cost norms for each industry. The manufacturing cost indicator is well known: systematically used even before 1965, it was a key indicator of centralized planning. Manufacturing cost reflects, in money terms, all outlays for manufacturing and selling a real unit of production. As such, /it is the most objective of the indicators known today. It shows how well an economic organization is performing and is not distorted by factors external to the given production facility, the most important of which are structural changes in the selection of goods produced. Manufacturing cost is one of the key tools for orienting economic activity away from spending: the lower the manufacturing cost, the better industrial performance is./ This indicator is also appropriate for tasks other than just planning the highest norms and using the normative planning and evaluation techniques. That is, it serves as a guide for future

activities and a barometer of financial needs, and, by factoring in use value, prevents the growth of spending and factory wholesale prices per unit of production.

In order to reduce production costs at enterprises, a number of bonus systems are used. Rewards are given at intermediate stages of production; that is, they are given for conserving raw and other materials, fuel, energy, and manpower. The amount of each individual bonus is relatively small, but on the whole the total sum of bonuses awarded can be quite large. Conservation of individual resources (with a bonus being paid out) frequently does not result in a reduction of the total manufacturing cost, since the system for keeping track of these savings is not always effective, and because the initial figures on the amount of these resources is kept artificially high. When up-to-date manufacturing cost norms are introduced and bonuses are offered for those who keep manufacturing cost down, we will be able to eliminate the labor-intensive and inefficient effort involved in keeping track of and awarding bonuses for conservation of individual kinds of resources and reduction of costs in limited areas.

/Despite the above-noted advantages of the manufacturing cost indicator and the considerable experience we have with it in industry, too little attention is given to it. One reason for this is the degree of objectivity and precision this indicator entails. If the indicator is calculated correctly, any drop in performance results in an increase in the per unit manufacturing cost of an item. At the same time, other indicators (such as costs and wages per ruble of output or sales volume) may improve because of increases in factory wholesale prices or efforts to up the proportion of profitable goods that are manufactured./

Another reason is that many people have the unsubstantiated view that the array of goods (25 million) is too extensive to permit norms to be set for each one. And on top of this, hundreds of new unit and private norms and standards are currently being developed. Every enterprise is setting standards governing the amount of raw and other materials and energy that can be used for each item. We should keep in mind that there are usually dozens of enterprises producing a given item. Development of manufacturing cost standards would reduce the amount of effort that goes into individual enterprises' norms to a major extent and relieve them of unnecessary auditing responsibilities.

Finally, we come to the third reason adduced in objection to industry-specific manufacturing cost norms. That is, norms set for facilities with advanced technology and sophisticated equipment will be unattainable for poor- and average-performance plants. Yet planning, evaluation, and incentives will not be able to motivate the collectives at enterprises unless personnel have a vested interest in increasing output and improving performance. This is only feasible if industry-specific norms for facilities with advanced technology, equipment, and organization are used, since all other enterprises will see them as the standard and follow their lead.

Planning and evaluating operations at any enterprise means there must be some point of comparison, or base-line, which can be used as a guide for making the

plan (the level and rate of growth of key indicators), and which serve as the yardstick determining how performance of the collective is evaluated and bonuses are awarded. For many decades, the following have performed this function: the level of performance during the review year; growth rates in previous years; and, most importantly, cost indicators for output volume and production performance. The technique based on this principle is known as the base-line method or past-results method, and has been the object of considerable criticism in recent years. When the base-line method is employed, evaluation of and bonuses awarded to collectives are based on the extent to which they are able to operate in accordance with the plan. This does not have a specific name, but we will not be in error if we call it the plan-performance technique of evaluation. It has never been criticized, even though there are serious problems with it.

Currently, the general inadequacy of the entire planning system is frequently and erroneously felt to stem from problems with certain aspects of the base-line method, as was the case previously with planning indicators. What made this view possible was the tendency of certain people to look at individual components of the planning system and economic apparatus in isolation. Yet if we look at the main elements of the economic apparatus (i.e. planning, evaluation, incentives, and the way the three are linked together), it becomes apparent that the commonly held view is incorrect and that, in fact, the base-line method is relatively harmless compared with the currently accepted evaluation techniques, system of indicators, and incentive arrangements.

The key to the base-line method is that it presumes steady growth of indicators. That is, it is predicated on the notion of the job being done better on a daily basis. However, this virtue of the base-line method is not always seen in practice, since in many cases it is not advantageous for enterprises and ministries. Moreover, the cost indicators for an enterprise in a planned year are, on the whole, not commensurable with those for the review year. This is the result of structural changes in the array of goods produced. Our analysis has shown that plan indicators are frequently set at levels lower (2) than those the enterprise has already attained. When this happens, production is normally at levels in excess of quota, with the result that collectives receive bonuses and other forms of compensation. Table 1 shows the ratio of planned indicators to review year indicators for the 1975-1983 time frame at 17 machine building, metallurgy, and chemical industry enterprises and 10 coal mines.

Table 1 (in %)

(1) Показатель	(2) По предприятиям		(3) По угольным шахтам	
	(4) плановые за данные были хуже достиг- нутого уровня в предшес- твующем от- четном году	(5) фактически показатели отчетного года были хуже фактически показателей базисного года	(6) плановые за данные были хуже достиг- нутого уровня в предшес- твующем от- четном году	(7) фактически показатели отчетного года были хуже фактически показателей базисного года
(8) Объем реализованной продукции	47,8	41,2	75,0	47,5
(9) Сумма прибыли от ре- ализации (по шахтам — себестоимость 1 т у- гля)	52,9	50,7	60,7	75,0
(10) Производительность тру- да	45,6	46,3	75,0	60,0

[KEY TO TABLE 1]

1. Indicator
2. At enterprises
3. At coal mines
4. Quotas specified in the plan were lower than the level reached in the previous year
5. Actual review year indicators were worse than actual base-line year indicators
6. Quotas specified in the plan were lower than the level reached in the previous year
7. Actual review year indicators were worse than actual base-line year indicators
8. Volume of production sold
9. Amount of profit from sales (for mines the production cost per ton of coal is given)
10. Labor productivity

The findings from our analysis as a whole and the data in table 1 show that in 40 to 50 percent or more of the cases (one enterprise over one year), planned and actual review year indicators were worse than base-line year indicators. Apparently, the base-line method is not used throughout the economic system, and instead the less demanding empirical technique is favored. Thus, it is illogical to blame problems with the economic system on the base-line method.

/It is extremely dangerous to use the empirical planning technique to lower quotas when the planning technique of evaluation is involved, because all that is needed to give the appearance of outstanding performance and progress is to accept a plan that is figured at 10 to 20 percent below the review year level every five years or so, and then dramatically "improve" performance./ This can especially occur under self-planning, self-financing, and increased

independence without real control from above for manufacturing cost and wholesale release prices of certain products, as was practiced during the last decade.

/Studies of industrial enterprises in the period from the 1930's to the 1950's demonstrate that the indicators and planning and incentive techniques in use at the time, as well as frozen factory and other wholesale prices, played a key part in helping the USSR develop its industry in a very short period of time and, later, rebuild its war-torn economy./ During this period, a large number (several dozen) enterprise performance indicators were used. The most important of these were the ones for which bonuses were awarded: reduction of comparable item production cost; and growth of gross output in constant prices. At the same time, a centralized planning regime was in operation. This meant that all indicators (level and rate of growth) were set for a given enterprise from "above" by an agency farther up in the economic hierarchy. As is the case now, the base-line method of planning and the plan-performance method of evaluation were both used.

The situation over the last 20 years has been different. Because of the scientific and technological revolution, production of obsolete items is stopped and new items are substituted in the plan much faster. And large amounts of new capacities are being introduced as a result of retooling, overhauling, and expansion efforts. In the wake of this, the array of items produced and structure of industry are changing systematically and the proportion of comparable commercial production is going down. Since an enterprise can often produce some new item much more efficiently than the old ones, structural changes in the array of items produced and in the composition of the manufacturing apparatus have had a major affect on the level and, especially, the rate of growth of all cost indicators for a given enterprise as a whole. This has made it impossible to compare them, both in the production dynamic and in the plan as well, leaving comparison to wait until review reports are compiled.

At enterprises where the percentage of items which are advantageous to produce has been increased, cost indicators and the base-line method have permitted adoption of a plan with quotas and deadlines that are easy to meet and that has high growth rates. At others, however, where the percentage of items which are disadvantageous to produce has increased, it has been difficult to maintain the growth rate that indicators show for previous years. Among the factors most responsible for the impossibility of comparison are: lack of constant factory wholesale prices, which means multiple price revisions; and growth of new item--especially machinery--prices at rates that are not proportional to the use value of the items. At the same time, industrial production has expanded and the multiple reorganizations of management have put new personnel in charge of high-ranking economic agencies. In consequence of these two factors, it has become much more difficult to set sound plan quotas for lower-ranking organizations and enterprises.

For this reason, enterprises themselves have begun figuring the level and rate of growth of many of the indicators in the plan. From the associations and ministries above them, they obtain control figures that tell them how much of an item they will produce, what the array of items will be, how much capital

they will have to invest, and so on. As the plan (both annual and five-year) is being written, the enterprise uses the control figures to make a more precise determination of the array and quantity of items it will produce in money terms and calculates the values of the other indicators, including the performance indicator. These values are then adjusted by the higher-ranking economic agency.

In response to the implementation of the plan-performance method of evaluation and the development of a system of incentives based on the extent to which the quotas in the plan are met, some people at industrial enterprises, in pursuit of personal or collective interests, have lowered plan quotas and raised production cost and factory wholesale prices for new or updated items. These changes are not, however, an accurate reflection of the rate at which use value is growing. In consequence of this, inexpensive products have begun disappearing from their plans, to be replaced by higher-priced and more profitable ones. This is especially the case at machine building enterprises, where indicators show that over the last ten years costs have grown at a rate 3 to 5 times faster than the use value of products.

Those who support this way of meeting and exceeding the quotas in the plan are clearly seeking to insure their welfare through quantity and to the detriment of quality, and oppose introducing the production cost indicator, which would serve as an economic guide. In particular, they object to the high norms per unit of product use value this indicator would entail.

In this way, personal and collective interests in our antiquated system of running the economy are involved in unopposed conflict with the interests of society at large. We might add that this situation will not remedy itself. The only way to dismantle these interests is to reform the economy by using the new norm-based approach to planning, evaluation of performance, and bonuses received by enterprise collectives.

For more than twenty years, many attempts, most of which have not been successful, have been made to eliminate conflicts and problem trends resulting when enterprises do the following: "successfully" produce the quantity of some product required in a plan for which indicators have frequently been lowered and the "success" of which is based on higher factory wholesale prices and changes in the composition of the product array; lower rates of improvement in performance; increase the production cost of individual items; and fail to link cost indicators of products with their actual value.

When the economic reforms of 1965 were being implemented, an attempt was made to start using economic methods of management. These methods were based on: cutting back the number of indicators that had to be approved by higher authority; completely replacing certain cost indicators for an enterprise with others; using profits to create incentive funds; and requiring payment for special-purpose funds. Other measures were also tried, some of which (for example, eliminating free funds) resulted in an increase in the rate at which indicators rose. Afterwards, however, the trends noted above returned, since the same old and outdated techniques of planning and evaluation would be used, and the new cost indicators could not help but suffer from all the same deficiencies as the previous ones.

The new bonus system never really got a good start either. Bonuses from the material incentive fund (which was formed from profits) were paid, primarily to engineering personnel, for actually fulfilling the plan, and represented only 3-8 percent of the total salary fund. At the same time, workers received bonuses from the salary fund that were dozens of times higher than the appropriate amount, and for work that constituted only an intermediate stage in fulfilling the plan. Changes in the system of price formation (determining the amount of net profit in the price of a product) were inadequate to impact favorably on the economy, since factory and other wholesale prices went up repeatedly and independently of any increase in the usefulness of a product, and there were no constant prices on products.

As part of the effort to improve the planning system, the selection and verification of ever newer indicators attracted a considerable amount of (unjustified) attention. Discussions took place and proposals were made to introduce a multitude of new indicators. These included, first and foremost, enterprise-wide indicators, but there were complex and integrated ones as well. Among those verified experimentally and introduced were: commercial production; normative and constant cost of processing; actual and normative net production; normative net production with moderate profit; sold production; and sold production with a factor indicating degree to which contract obligations have been met.

Because they have erroneously failed to make a distinction between problems in the planning system and the lack of objectivity of such volume cost indicators as gross, commercial, and sold production, many economists treat updating the planning system as something requiring no more than the replacement of the overall enterprise product output volume indicator with a different indicator. The advantage of the indicators they propose are based on individual benefits selected in advance, and are normally theoretical, deductive, and unsupported by solid economic data and appropriate quantitative criteria. Hence, some economists (2) have been finding major shortcomings in some of those indicators (for example, net production) whose advantages have been proven conclusively by others (3).

It would appear that this technique permits one to prove the advantage of any indicator, since every overall enterprise production volume cost indicator has both advantages and shortcomings. Both of these, depending on the production environment, may distort the reliability of product output growth level and rate measurements, as well as of performance indicators, the calculation of which is based on the production cost volume indicator. It is thus not surprising that several years after the normative net production indicator, to name an example, began being used, its proponents were forced to admit that it had not met their expectations, primarily because, contrary to forecasts, it had not eliminated distortion resulting from structural shifts in the array of goods produced. One of them writes: "In actuality, the influence of structural changes is not eliminated; the only thing that changes is the character of the influence." (4)

Since economists are still trying to logically justify the advantages of using indicators that show net production, and even estimated production, as well as

to prove the efficacy of using other overall enterprise cost indicators, we should discuss in detail the inefficacy of continuing with efforts to update the planning system by doing nothing more than replacing one cost (gross) indicator with another.

Our analysis of 25 indicators at enterprises in 6 industries over a 10 year period convinced us that not one of the currently known output volume indicators or overall enterprise performance indicators calculated on the basis thereof is free of distortion resulting from structural changes in the array of goods produced or changes in product or raw material prices. This influence occurs not only or even to a great extent as a result of variations in the level of materials usage, as is usually maintained. Instead, it is much more attributable to variations in the share of profit, salary, and other funds that go into each unit of production. These variations stem from varying levels of output; that is, degree of benefit of each resource expenditure necessary to produce an item (see table 2).

[Table 2 on following page]

Table 2 (in rubles)

(3) Предприятие и продукция	(4) Выпуск товарной продукции с 1 руб. затрат по:			(5) Получение прибыли с 1 руб. затрат по:			(6) Затраты на 1 руб. товарной продук- ции по заработ- ной плате	(7) Все зат- раты (по себестоимости) на 1 руб. то- варной продукции
	(8) мате- риалы и сырье	(9) зара- ботной плате	(10) амор- тиза- ции	(11) мате- риалы и сырье	(12) зара- ботной плате	(13) амор- тиза- ции		
(14) Лисичанский ордена Ленина содовый завод им. В. И. Ленина								
(15) Сода кальцинированная	2.893	5.462	5.656	0.389	0.734	0.757	0.1831	0.8656
(16) Каустик чешуйчатый	2.791	22.449	32.696	1.003	8.069	11.752	0.0445	0.6406
(17) Бикарбонат натрия	3.511	3.253	4.202	0.061	0.057	0.073	0.2074	0.9826
(18) По всей продукции	1.984	6.240	6.192	0.467	1.280	1.270	0.1602	0.749
(19) Северодонецкий завод крупнопанельного домостроения								
(20) Кирпич силикатный	1.339	4.418	13.962	0.003	0.010	0.031	0.2264	0.9978
(21) Блоки газосиликатные	1.633	5.685	19.298	0.151	0.527	1.789	0.1759	0.9073
(22) Панели промышленные	1.643	4.174	17.378	0.226	0.580	2.415	0.2396	0.8610
(23) По всей продукции	1.744	4.424	13.813	0.167	0.424	1.325	0.2260	0.9077

[KEY TO TABLE 2]

1. [not used]
2. [not used]
3. Enterprise and product
4. Output per 1 ruble spent on:
5. Profit per 1 ruble spent on:
6. Salary costs per ruble's worth of output
7. All costs (production cost) per ruble's worth of output
8. Raw and other materials
9. Wages
10. Depreciation
11. Raw and other materials
12. Wages
13. Depreciation
14. Order of Lenin Lischansk Soda Plant imeni Lenin
15. Soda ash
16. Flake soda
17. Sodium bicarbonate
18. All production
19. Severodonetsk
20. Lime and sand brick
21. Gas and silicate blocks
22. Industrial panels
23. All production

Varying degrees of return were obtained from putting identical amounts of resources into the production of items in the same and different enterprises. This was not the result of any subjective factors in individual years and at certain enterprises. Instead, it is an objective process caused by variations in the production cost structure and in the factory wholesale price of every product at any enterprise.

Large amounts of intermediate goods and considerable investments of labor are needed to manufacture certain kinds of products. Others require a predominance of manual labor. And still others are material intensive, using little labor but considerable amounts of producer goods. Hence, whatever cost indicators have been used, variations in the degree of return from each kind of expenditure and resource have always resulted in the production of two kinds of goods for an enterprise: profitable and not profitable. This is not about to change. Depending on which aspect of the production process is looked at, the profitability of different and the same products may be, and frequently are, subject to interpretation. For example, at the Azot Production Association in Severodonetsk, commercial production of kaprolaktam [not further identified] per ruble of material used is at a level 22 percent lower than that of ammonia. At the same time, the situation is reversed when return per ruble of producer goods, which is 46 percent higher for kaprolaktam, is examined. In this example, the ammonia is 40 percent more profitable than ammonia. To convince ourselves of this, we need do no more than compare the structure of factory and other wholesale prices to the production cost of three or four different products at a single and different enterprises within the same and various branches of industry.

The figures in table 2 show that the difference in the amount of resources, salary, and profit needed to manufacture a product is greater than the difference in the amount of material used by a factor of between 2 and 5 or more. Hence, today's efforts to arrive at planning norms by using such overall enterprise cost indicators as wages and costs per ruble of commercial production will not have either a long-term or production-raising character. The values of these indicators are a function not only or even to a great extent of the efficient use of manpower and other funds for production as of the profitability and array of goods produced.

/The economy as it is now needs more than just the replacement of one cost (gross) indicator with another; it needs fundamentally new techniques of planning, evaluation, and motivation./ These techniques must be an accurate reflection of what collectives have accomplished. In addition, they should encourage an economic environment and the material interestedness enterprises and individual workers will need to use accelerated scientific and technical progress for enhanced performance.

As has already been noted, the most effective way to deal with the above tasks is to use the normative planning and enterprise evaluation technique. The following indicators may serve as guides: production cost per unit of each type of product (as well as industry-specific high production cost norms for the same product); and real output with a consumer usefulness factor figured in. Also needed are techniques of and programs for giving bonuses when

production cost is lowered. Such awards would also be tied to the degree to which high industry norms had been attained and would be predicated on contractual delivery obligations having been met.

/As we can see, prerequisites for economic restructuring are: up-to-date per unit production cost norms in every industry; replacement of the base-line planning method and the plan-performance method of evaluation with a normative method. This normative method would have to be accompanied by norms specifying the amount of bonus to be awarded for each percentage point of decline in production cost./

These norms could be set by industry scientific and technical institutes working jointly with the appropriate USSR Gosplan departments and institutes. The expedience and urgency of these norms stems from the critical need to improve industrial production performance, which cannot be accomplished without systematically and steadily lowering the production cost of every product, while duly factoring in quality (usefulness).

During the first stage, statistical audits and industry informational surveys will be used to determine enterprises' best actual performance in terms of production cost of a given item, as well as their best industrial planning based on sophisticated equipment, technology, and work design. The second stage will involve preparing data that show: the amounts of raw and other materials, energy, fuel, and manpower that are used; and the effectiveness with which the best USSR and foreign enterprises use their primary manufacturing equipment. In addition, this stage would entail using factory wholesale prices as the basis on which payment for costs incurred would be rendered. The task of producing equipment that is as reliable, economical, and durable as the best in the world cannot be accomplished unless we compare production cost figures both here and at the best foreign enterprises.

The above-mentioned economic data will also help create up-to-date industry production cost norms. These will have to be approved for a five year period by the appropriate ministry and the USSR Gosplan. Annual adjustments may be made, but only on the basis of production cost norms for new products.

Up-to-date norms would be used to make plans and prepare reports on enterprise activity. In turn, the difficulty of the plan and real performance would be evaluated during the review year through comparison with approved up-to-date industry production cost norms. This might involve, for example, comparing planned and attained levels with normative ones.

For an enterprise's entire array of products, the following formula of indexes, whose composition does not change, is used:

$$H_c = \frac{\sum_{i=1}^n O_{in} C_{in}}{\sum_{i=1}^n O_{in} C_{in}} 100,$$

- (1) где H_c — степень приближения плановой себестоимости к нормативному
 (2) уровню (напряженность плана);
 O_n — количество каждого вида продукции в натуральном измерении
 (3) (4) в плановом периоде;
 C_n, C_n — себестоимость единицы каждого вида продукции по нормативу и по плану.

[KEY TO FORMULA]

1. Degree of closeness of production cost specified in plan to normative level (degree of difficulty of plan)
2. Number of each type of product in planning period
3. Production cost of each product as specified by norms
4. Production cost of each product as specified in plan

This formula shows the actual level of success a collective has reached in comparison with the normative level, with the single difference that the values for quantities of goods and their production cost are taken from the period covered by the plan instead of the review period.

From an economic standpoint, the purpose of using this formula is to obtain a simple quantitative assessment of the performance of a collective during a review period. In addition, it helps determine the degree of difficulty of quotas specified in the plan in comparison with the up-to-date normative level that is attainable through the use of the latest equipment and industrial organization. This comparison is further based on the potential, which is included in up-to-date norms, of each element of the production process. At the same time, the degree in percentage to which the normative production cost level is reached is not distorted by structural changes in the array of goods produced, since these goods utilize varying degrees of materials, profit, labor, and money.

The amount by which the normative production cost was higher than the level in the plan or audit would be under 100 percent. The better an enterprise worked, the closer its performance data would be to normative data. It thus follows that the higher the production cost compared to the normative level, the lower the production performance.

Table 3 shows an example of plan execution difficulty and actual enterprise performance compared to up-to-date production cost norms (normative technique).

Table 3

(2) Показатель	(3) По видам продукции			(7) В целом по предприятию
	(4) аммиак	(5) аммиачная селитра	(6) капролактан	
(8) Отраслевые прогрессивные нормативы себестоимости, руб/т	45,0	30,0	612,0	-
(9) Плановые показатели предприятия:				
(10) по себестоимости продукции, руб/т	56,0	50,0	862,0	-
(11) по объему продукции, тыс. т	150	400	20	-
(12) Фактические показатели предприятия:				
(13) по себестоимости продукции, руб/т	54,0	49,0	850,0	-
(14) по объему продукции, тыс. т	180	410	25	-
(15) Оценка напряженности плана по нормативному методу, %	80,36	60,70	70,9	67,9
(16) Оценка фактических достижений по нормативному методу, %	83,3	61,2	72,0	69,9

[KEY TO TABLE 3]

1. [not used]
2. Indicator
3. Type of product
4. Ammonia
5. Ammonium nitrate
6. Caprolactam
7. For the enterprise as a whole
8. Up-to-date industry specific production cost norms (in rubles per ton)
9. Enterprise indicators as specified in plan
10. Production cost in rubles per ton
11. Output volume in thousands of tons
12. Actual enterprise indicators
13. Production cost in rubles per ton
14. Output volume in thousands of tons
15. Degree of difficulty of plan, calculated using normative technique (in percent)
16. Real performance, calculated using normative technique (in percent)

As we can see from table 3, planned and real production cost for individual products are 20 to 40 percent higher than the normative level. For the enterprise as a whole, this figure is 32.1 percent, while in the report it is 30.1 percent. When an enterprise's indicators show performance in excess of quota in every indicator category, it means the enterprise has tremendous potential and that the system of awarding bonuses to the collective should be oriented toward utilizing production resources to reach normative production cost levels.

The comparable goods production cost reduction indicator, which was previously (up to 1965) used successfully for planning, evaluation, and awarding bonuses, was also calculated using the constant composition formula of indexes. At the same time, however, review year indicators were used as the datum for comparison. This yielded objective results, since the proportion of comparable commercial production was quite high during enterprise expansion. Replacing data on review year production cost with up-to-date industry norms represents a major change in the approach to planning and evaluating enterprises and an answer to the problem of accelerating the socio-economic development of our country. It should be noted that the replacement of the base-line method with the plan-performance technique of evaluation is of no less importance in this respect.

The normative technique is important when a new product starts being produced. Frequently, industrial enterprises make unjustifiable increases in factory and other prices and production cost, especially for machinery and equipment. But if production cost norms are established by the USSR Gosplan, every institute and factory will have to try to develop new equipment whose production cost will be the same as or lower than previous normative levels for the same domestic or foreign made product per unit of consumer cost (degree of the product's usefulness). In addition to lowering production cost, which is the main tool needed to operate a non-loss economy, a major part in the acceleration strategy belongs to growth in the volume of high quality goods. In the final analysis, any enterprise operates to create consumer valuables, with the goal of using them to satisfy social needs, be they those of individuals or enterprises. Production would be meaningless if it could not satisfy these needs. "Unlike a simple natural object, a product is just that; it becomes a product only when used." (5) The 27th CPSU congress noted: "In other words, gross output is not the main thing. What people need is quality, variety, and quantity." (6)

/For enterprises, the ultimate goal is a product/ that satisfies some need; that is, a product delivered to the user or purchased by the buyer. /The quantity of this product to be produced must be planned and evaluated (as is done in industrial collectives operating in the new economic environment) in accordance with sales volume. Another factor that must not be disregarded is the extent to which delivery contracts are carried out; and in light industry the volume of goods purchased is important. This indicator should be the second of the two which serve as guides for planning and evaluating enterprise activity./ The volume of sold goods in cost terms should be treated as an estimate.

In order to have error-free planning of actual product volume and evaluation of how well a collective has performed, we need up-to-date industry-specific main production equipment utilization norms. That is, we need norms showing the industrial capacity of an industrial enterprise. As with production cost norms, it would probably be a good idea to base the new ones on the best performance at both domestic and foreign industrial facilities, as well as on technical and economic figures showing how effectively modern equipment is being used.

Key factors that should be looked at in evaluating actual goods produced are quality, durability, reliability, output rating, productivity, and so on. In order to insure that quality meets top domestic and foreign standards, both state and departmental inspection and certification systems are needed. The only way low quality products can be interdicted is if independent specialists who are disinterested in the volume of output perform the inspections. The previously unsatisfactory situation in this respect is now being resolved. The USSR Council of Ministers has approved the Regulations Regarding State Certification of Products at Associations and Enterprises, and bodies to perform the functions specified in the regulations are being created.

Economic benefit will result from initiating self-financing based on total earned profit and the acquisition of independence by enterprises. At the same time, superior authorities will continue to monitor ultimate performance. This performance will be embodied by the following: production cost of each particular product; reduction in production cost per unit of use value; and output volume in terms of ability to fulfill an actual need. /Without a superior control agency operating in accordance with approved norms, the quotas in the plan will continue to be lowered and factory wholesale prices on new goods, especially machinery and equipment, will continue to go up./

Another important prerequisite to updating the economy is /restructuring the performance-based bonus system/; that is, reforming the bonus system by lowering per unit production cost, with all contractual deliveries taking place.

The main problems with the current incentive system result from two factors: the failure of wage fund size or growth rate, and especially of bonus fund size, to be tied to performance; and the existence of numerous unrelated bonus programs, techniques, and funds that have nothing to do with performance. Every enterprise now has between 20 and 50 different kinds of bonuses (primarily for workers) that are based on only one aspect or part of the overall production cycle, such as meeting the individual worker output norm, performing outstanding equipment maintenance, etc. This system of incentives often results in large bonuses being paid to workers at facilities with high production cost levels. In many cases, in fact, lowering or even raising production cost does nothing to change the situation.

Hence, the best solution is to create a unified bonus fund made up of enterprise profits. The mechanism of acquiring money would be direct withholdings from the money saved by lowering production cost and would be tied to the degree to which production cost approximated to the normative

level. Bonus norms should be long-term, industry-specific, and constant for each five year plan. In order to accomplish this, the enterprises in an industry have to be broken down into between 3 and 6 categories, depending on the level of their equipment and the production cost of goods in comparison with up-to-date norms. The size of a bonus fund would be 15 to 30 percent of the size of the salary fund, with every percentage of decrease in overall enterprise production cost reflected in a 2 to 5 percent increase in bonus levels. In other words, the closer actual production cost level is to up-to-date normative levels, the higher the normative bonus level. The total amount of all bonuses, which will be set as a percentage of the total salary fund and will be based on up-to-date salary norms, must be subject to strict control by superior authorities.

In important factor to take into consideration when distributing an enterprise's bonus fund and setting the bonus level for individual collectives, shops, teams, and sections is the contribution each of them has made to reducing production cost per unit of use value. The bonus system should work the same for both engineers and workers. After all, engineers are no more responsible for quality or production cost than workers. Thus, fines for deliveries of low quality goods should be taken not only from enterprise resources, but from the bonus and salary funds of those responsible.

/Updating the system by which the price per unit of use value is set represents an important part of the effort to restructure the economy. This is particularly true of the prices for new equipment./ At the same time, it is important that we modernize the ways net income is set in price and the system used to calculate production cost. We can accomplish this by increasing the percentage of direct spending and improving the indirect spending regime. In order to objectively measure the rate of acceleration, we must revive the constant factory wholesale price system used between the 30's and 50's.

Our industry is completely ready to use the normative technique of updating enterprise planning, evaluation, and incentive awards on the basis of up-to-date industry-specific long-term production cost norms and percentage of capacity at which primary production equipment is operating.

FOOTNOTES

1. By worse, we mean that the indicators showing volume of production, amount of profit, labor productivity, and plant profitability are set in the plan at a lower level than that attained in the review year, and that those showing production cost (that is, cost per ruble's worth of commodity) are higher than the review level.

2. See: Khromov P.L. Net Production and Other Labor Productivity Indicators // VOPROSY EKONOMIKI. 1976. No.5. pp 124-133.

3. See: Rogovskiy N.I., and Kiperman G.Ya. Experience with the Net Production Indicator // VOPROSY EKONOMIKI. 1976 No.2. pp 108-117.

4. Ukrainskiy D.V., and Kiperman G.Ya. Planning and Evaluating the Operations of Industrial Enterprises // Moscow: EKONOMIKA, 1984. p 134.

5. Marx K., and Engels F. Collected Works. vol 12. p 717.

6. Materials from the 27th Congress of the Communist Party of the Soviet Union. Moscow: Politizdat, 1986. p 36.

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METHODOLOGY FOR SETTING PRICES ON NEW PRODUCTS PROPOSED

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[Article by I. Savelyev, candidate in economic sciences, and N. Kolodeznaya:
"On the Question of Developing a Methodology for Setting Prices on New Products"]

[Text] Wholesale prices on products are established in accordance with the Methodology of the USSR Goskomtsen [State Committee on Prices], which provides for their development on the basis of production cost, profitability standard, and the system of incentive mark-ups. In this case, the growth in consumer cost of new products, which is determined by physical, chemical and other properties, is not always considered in the price. As a result of this, the relationship of prices on new products and those already being produced, as a rule, does not correspond to the consumer qualities of the product, and sometimes it is even in complete contradiction with them. This may be illustrated in the example of comparing the values of one of the basic technical indicators for organo-silicon heat resistant lacquers--the mass portion of nonvolatile substances, measured in percentages according to their grades and levels of wholesale prices set on the basis of production cost (Table 1).

Table 1.

1- Показатель	2- Марка лаков (условно)						
	А	Б	В	Г	Д	Е	Ж
3- Массовая доля нелетучих веществ, %	15-17	30-34	33-37	37-43	40-46	56±2	60-66
4- Среднеотраслевая себестоимость производства в пересчете на 1%, руб/т	87,80	69,72	42,14	69,75	814,12	85,55	881,95
5- Оптовая цена, руб/т . .	1830	3300	1900	4600	3000	6700	6300

Key to Table 1:

- 1 - Indicator
- 2 - Grade of lacquer (specific)
- 3 - Mass portion of nonvolatile substances, %;

- 4 - Average sectorial production cost computed per 1 percent, ruble/ton
- 5 - Wholesale price, ruble/ton

The system of mark-ups on wholesale prices does not significantly alter the solution of this question, since the basis for determining the mark-ups is the level of the price already established, while the value of the national economic effect depends not only on the growth of the consumer cost, but also on other factors. In the sphere of application it also depends on the price level.

In computing wholesale prices it is necessary, in our opinion, to proceed from the fact that the improved quality of a new product as compared with the base level increases the wholesale prices. The reduction in expenditures for production of a new product (growth of economic effectiveness) leads to a reduction in the wholesale prices. The provision of standard profit for the producer of a new product is justified only if such conditions are created under which the correct ratios of consumer cost (quality) of the new product to its production cost are achieved.

Developing wholesale prices on the basis of individual expenditures of enterprises and guaranteed profit make it possible for these enterprises to formulate economic incentive funds without increasing labor productivity and product quality. Moreover, deduction of the free remainder of the profit to the state budget does not stimulate the enterprise in reducing production cost of the product. The state also has no interest in this, since in this case it receives monetary funds which are not materially ensured by the growth in material wealth.

Therefore, the price must not only reflect the cost (production cost and surplus product), but also the consumer cost. This is possible with the effect of such a mechanism on the process of price formation which would allow us to approach it as an indicator reflecting not so much the average sectorial level of production outlays and the standard (or formulated) level of surplus product, but rather as an indicator reflecting the quality (consumer properties) of the product.

Surplus product, in essence, is reflected not in the form of profit, which is determined in accordance with the standard of profitability and which in its sum may differ from its real cost evaluation. Rather, it is reflected in the product's consumer cost, newly created in production and with deduction of the production costs, as realized by the consumer. And since the main purpose of the manufactured product is to satisfy certain demands, it would be inadmissible to overlook the dynamics of the product's consumer cost in developing wholesale prices or their comparison with the formulated production outlays for already manufactured as well as for new products.

Considering what we have said, we may use the following model for formulating wholesale prices on new products:

$$U_{n\pi} = U_{0\pi} \frac{K_{0\pi}}{K_{0.6}} \frac{3_{n\pi}}{3_{0.6}} \quad (1)$$

with the limitations:

$$\frac{K_{0\pi}}{K_{0.6}} \geq 1; \quad (2)$$

$$\frac{3_{n\pi}}{3_{0.6}} \leq 1. \quad (3)$$

where $U_{н.н.}$ and $U_{б.н.}$ are the wholesale prices on new and base production, respectively; $K_{н.н.}$ and $K_{б.н.}$ are the generalizing indicators for level of quality of the new and base production, respectively (in the specific case, one technical indicator may be used); $З_{н.н.}$ and $З_{б.н.}$ are the expenditures for production (production cost) of the new and base products, respectively, computed per unit indicator of quality level. If we take grade A lacquer as the base product, having an average mass portion of nonvolatile substances in the amount of 16 percent and a production cost of 1,405 rubles/ton, then all the other lacquers will have higher quality level indicators than this product, i.e., condition (2) is fulfilled. The computed values of the initial data for formula (1) are presented in Table 2.

For all products except lacquers of grades Д and Ж, condition (3) is also fulfilled. Therefore, for these types of lacquers we accept the value $\frac{З_{н.н.}}{З_{б.н.}}$ at the level of minimal requirements, i.e., equal to 1.

Table 2.

	1 - Марка лаков						
	А	Б	В	Г	Д	Е	Ж
$\frac{K_{н.н.}}{K_{б.н.}}$	1	2,19	2,19	2,5	2,69	3,5	3,94
$\frac{З_{н.н.}}{З_{б.н.}}$	1	0,794	0,480	0,794	9,27	0,974	10,04

Key to Table 2:

1 - Grade of lacquers

In computing the wholesale prices according to formula (1), we take $U_{б.н.}$ to be the wholesale price on grade A lacquer not in accordance with the price list, but rather based on the production cost of 1,405 rubles/ton and the sectorial level of profitability in the amount of 15 percent, i.e., 1,615 rubles/ton ($1,405 \cdot 1.15$).

In this case, the level of wholesale prices on the corresponding grades of lacquers will comprise: А - 2,525 rubles/ton; Б - 1,697; Г - 3,205; Д - 4,345; Е - 5,505; Ж - 6,394 rubles/ton.

As we can see from the computations, the production of grades Д and Ж lacquers will be ineffective, since the relation $\frac{З_{н.н.}}{З_{б.н.}} > 1$.

The proposed methodology of computing wholesale prices, in our opinion, stimulates enterprises toward manufacturing higher quality products since, having correctly determined the base for computing the wholesale price, it is possible to set [wholesale prices] in accordance with the level of quality indicators. Here the

correct determination of production cost is controlled by a corresponding system of norms and standards, as well as by adherence to condition (3) which when its value is equal to one determines the margin (lower limit) of economic effectiveness of technological processes in accordance with the reduction in production cost.

Thus, formula (1) allows us to consider in the wholesale price the quality, the expenditures, and ultimately also the economic effectiveness of the product.

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ECONOMIC EXPERTS QUERIED ON REGIONAL DIVISION OF LABOR

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[Interview with A. N. Gladyshev, doctor of economics, professor, A. P. Levin, doctor of economics, V. G. Udovenko, doctor of economics, and V. P. Yevstigneyev, candidate of economics, by A. A. Simonyan, editor of PLANOVOYE KHOZYAYSTVO: "The Territorial Division of Labor and Ways of Perfecting It"; date and place not specified; first paragraph is PLANOVOYE KHOZYAYSTVO introduction]

[Text] The acceleration of the socio-economic development of the USSR, the intensification of social production and the increase of its efficiency are inseparably linked with the further perfection of the territorial division of labor. A. N. Gladyshev, doctor of economics and professor, A. P. Levin, doctor of economics, V. G. Udovenko, doctor of economics, and V. P. Yevstigneyev, candidate of economics, in a discussion with the editor of the journal, A. A. Simonyan, express their opinion about the key problems of the perfection of the territorial division of labor in light of the decisions of the 27th CPSU Congress.

A. Simonyan: The restructuring that is taking place touches all aspects of the life of our society. To what extent does it influence the intensification of the territorial division of labor.

A. Gladyshev: In the USSR, revolutionary transformations [preobrazovaniya] are taking place which are aimed at the creation of all-round developed productive forces, mature socialist production relations, a well-tuned economic mechanism, and a healthy moral situation. Sectors of the national economy are being reconstructed on the basis of modern technology, which guarantees the growth of labor productivity, the reduction of costs per unit of articles, and the increase of the quality of production. In other words, we are talking about transferring the national economy to the rails of intensification. The systematic character and proportionality of its development is increasing. The economic mechanism of management is improving. Primary importance is being assigned to the satisfaction of the social demands and needs of man. Cost accounting and self-financing are being introduced more intensively, the independence of enterprises, associations, and local organs of Soviet power is expanding. All of this guarantees the acceleration of the social and economic development of the country, the intensification of the social division of labor, including the territorial division of labor, and the increase, on this basis, of the contribution of all union republics to the satisfaction of the demands of the country and to the integrated and highly-efficient development of each region.

V. Udovenko: The perfection of the territorial division of labor is directly related to the intensification of integration processes in the economy. The fact is that until recently an active process of differentiation of the national economy took place, which served as the basis for the creation of new industries with the structure of management characteristic of them. The differentiation exerted significant influence on the formation of proportions in the economy, the change of the place and the role of regions in the territorial division of labor, and the improvement of the structure of their management. All of this had a positive effect on the growth rates and efficiency of social production.

At the same time, industrial differentiation strengthens the departmental approach in the adoption of national economic decisions, narrows the limits of responsibility, and gives rise to interdepartmental dissociation, through which the state incurs enormous losses. In these conditions, the possibilities of the combination of the industrial and the territorial principles of planning weaken, the organizational structure of management becomes more complex, the inter-industry and inter-rayon balance is disturbed, and the utilization of material, labor and financial resources deteriorates.

A. Levin: I would like to add that the new structural and investment policy now being carried out can exert a considerable influence on the territorial division of labor. Its essence consists in the transference of basic attention from quantity to quality, from intermediate to final results, from new construction to the reconstruction and technical reequipping of producer goods, and from the build-up of the extraction of raw material and fuel and energy resources to the improvement of their utilization. Moreover, the change in structural policy consists in the acceleration of the development of the progressive industries, which secure scientific-technical progress in the entire national economy; the satisfaction of the immediate needs of the population, and the preferable growth of the production and social infrastructure. And, finally, in the change of the territorial proportions of the national economy through the accelerated development of the productive forces of the eastern regions of the country.

V. Yevstigneyev: In connection with the intensification of the social orientation of the economic development of the country and the raising of the well-being of the people to a qualitatively new level that is projected in the long-term plans, the securing of a more efficient territorial division of labor is unthinkable without the overcoming of the territorial differences in the standard of living and in the working conditions. In spite of the enormous advances in the development of the productive forces of the union republics and economic regions, appreciable territorial differences remain to this day in the real incomes of workers, their supply with various consumer goods, the development of the service sphere, the solution of the housing problem, etc. Especially urgent are these questions for the Eastern regions of the country, where enormous improvements in the development of social production are being projected.

However, in order to reach new boundaries of the well-being of the people throughout the regions of the country, it is necessary to significantly increase the efficiency of social production and to increase the contribution of every

republic to the national income of the country. The improvement of the interdependence between the further territorial division of labor and the increase of the standard of living of the population in the union republics and economic regions is possible only when the above-indicated problems in the complex are solved.

A. Simonyan: The intensification of the territorial division of labor and the intensification of its integration under the influence of the deep processes of the transformation of our society taking place today determine the necessity of their new theoretical comprehension. In what direction is the research of Soviet economists on these problems being conducted?

V. Udovenko: During the past 15 years, a significant number of studies have appeared on the problem of the territorial division of labor, many of which deserve serious consideration. At the same time it must be recognized that up to now there is insufficient research throwing light on the special features of the improvements taking place in the territorial division of labor, on the regularities, principles and factors determining the contemporary distribution of productive forces. It should be noted that for the working-out of such fundamental problems all the conditions exist in our country: The theoretical foundations, the scientific-organizational system, which encompasses hundreds of institutes of ministries, departments and union republics, and, finally, the necessary material and financial resources. It seems to us that at the present time not only the further elaboration of the theoretical problems of the territorial division of labor in light of the decisions of the 27th CPSU Congress are of great significance, but also the choice of directions for increasing their effectiveness.

V. Yevstigneyev: The problems of the territorial division of labor are solved in three stages. The first is the pre-plan research, which is necessary for the working-out of the theoretical, methodological and methodical questions of the socio-economic effectiveness of the distribution of social production, its territorial improvements, and the perfection of the territorial structure of production. The second is the development of state plans for the economic and social development of the national economy of the USSR, which serves as the basis for the more precise definition of the development of production in territorial terms. The third stage is the management of the process of the operation of the national economy, the chief task of which is the creation of the economic mechanism, economic methods, and incentives for the successful realization of the plans for the territorial division of labor.

The realization of the objectively existing territorial possibilities in the union republics and the economic regions requires the improvement of the distribution of productive forces in all three stages.

A. Gladyshev: I would like to define more precisely the concept of "territorial division of labor" and "distribution of productive forces." The process of the territorial division of labor encompasses all stages of the development of social production in a region: The systematic character and proportionality, the intensification of national economic specialization, cooperation, the improvement of transportation and economic links, the selection of the optimal forms of production, and others. The distribution of productive forces is an important element of the territorial division of labor. For this reason it is not

legitimate to reduce the whole problem of the territorial division of labor only to the distribution of productive forces.

A. Simonyan: In what way do the territorial peculiarities manifest themselves and how are they taken into account in the solution of the problems of the territorial division of labor?

V. Yevstigneyev: Territorial peculiarities influence the development and distribution of production, the change of expenditures and results, i. e., its efficiency for the regions of the country. Of the totality of territorial factors, their precise apportionment has not yet been attained. The classification of factors is given in general form, which makes them practically useless for the determination of the economic efficiency of the division of labor on their various levels (enterprise, group of enterprises, industry, inter-industry complexes, territorial production complexes, etc.). Moreover, the composition of territorial factors has not been established, which include, for example, material-intensiveness, fuel-intensiveness, electric power-intensiveness, and labor-intensiveness of production, etc., which characterize the industrial peculiarities of production. The factors of development and distribution also include concentration, specialization, planning, cooperation, and combination, without taking into account that their territorial manifestation (territorial concentration, territorial specialization of production, etc.) are to be found, which should also be included among the regional factors. For this reason, it is necessary to create an integral system of regional factors according to the degree of their influence on the development and distribution of production, which makes it possible to develop concrete methods for calculating the economic efficiency of the territorial division of labor on the various taxonomic levels. In so doing, it must be remembered that the character of the influence of the factors on the territorial division of labor is not always identical. For example, forestry resources may be regarded as a raw material, environmental, and recreational factor.

In the calculations of efficiency, the taking into account of the stability of the influence of territorial factors, by which we should understand the character of their operation during the calculation period is of great importance.

A. Simonyan: It is a well-known fact that the questions of the cost assessment of the industrial and regional factors are of special significance. How is it worked out in the methodical plan?

A. Levin: It should be noted that this question requires further research. At the present time, such assessments in the form of indicators and coefficients of regional expenditures are available for fuel, electric and heat power, water, land, construction, transportation, and living labor (territorial coefficients of wages of workers and employees and indicators of regional expenditures for the creation of special infrastructure). They have been developed by economic regions and make it possible to make judgments about territorial differences of different expenditures for resources of multi-purpose use. Thus, the indicators between the maximum and minimum values differ: For power-generating fuel--by a factor of 3.7, for electric power--by a factor of 2, heat power--by a factor of 2.7, water--by a factor of 15, land--by a factor of 21, construction and assembly work--by a factor of 3.4, and wages--by a factor of 1.4. As far as the deeper territorial division (krays and oblasts)

are concerned, they can increase here, for example, up to a factor of 2 in terms of wages, not to speak of the extremely important transportation expenditures for the conveyance of materials and finished products. The data cited indicate the significant differences of the regional peculiarities, which must be taken into account since it is precisely on them that the effectiveness of the territorial division of labor depends.

The economic influence of territorial factors changes significantly in time. The natural resources of sparsely inhabited regions of the country are involved in economic turnover, new mineral deposits are opened up, and the technology of raw material extraction and processing is being developed. All of this leads to a change of expenditures for resources for multi-purpose use. The general trend is the increase of expenditure for resources in the presence of the preservation of significant differentiation in expenditures for the economic regions of the country.

A. Simonyan: What is the role of the European part and the Eastern regions of the country in the territorial division of labor?

A. Gladyshev: I would like to dwell on the role of the European zone in the territorial division of labor, which is distinguished by an enormous concentration of productive forces, a stable structure of the national economy, and operational-economic relations with the other regions of the country. In it live three-fourths of the entire population of the country and is concentrated the basic part of the production forces, scientific-technical potential and social infrastructure. The overwhelming share of industrial and agricultural production is produced here and the basic volume of construction work is performed here. The intensive use of the economic and cultural potential of this zone is the most important factor in the acceleration of the national economy and the increase of the efficiency of the social production of the entire country.

In the Basic Directions of the Economic and Social Development of the USSR for 1986-1990 and for the Period to the Year 2000, the development of the economy of the European zone is oriented primarily on the technical reequipment and reconstruction of existing enterprises with the reduction of the number of workers in the sphere of material production. A policy of limiting the creation of new enterprises in large cities, with the exception of projects that are connected with services for the population. At the same time, fuller use is being made of the possibilities of the economic development of small and medium-size cities and workers' settlements through the siting of small, specialized enterprises, branches and individual shops of existing plants in them, as well as enterprises serving agriculture, processing its products, and producing articles from local raw material.

The productive forces of the European zone are being developed in the presence of a shortage of local raw material resources, the necessity of intensifying attention to questions of environmental protection and the rational use of natural resources.

The problem of providing the regions of the European part of the country with electric power and fuel requires solution. First of all, the development of energy-intensive production processes is being held back, which will make it

possible to reduce the demand for electric power and fuel and to increase the supply of fuel and electric power from the Eastern regions of the country. Along with the further improvement of the system of oil pipelines and the carrying capacity of the railways, powerful cross-country gas pipelines with a high degree of automation and operating reliability are being constructed. The installation of direct current electric power lines with a voltage of 1,500 kilowatt and alternating current with a voltage of 1,150 kilowatt in the central regions of the European part of the country is continuing.

An important direction is the intensive development of the nuclear power industry. A special feature of the new five-year plan in the sphere of the production of electric power is the orientation toward the rapid development of nuclear and hydroelectric power stations, through which the increase in the production of electric power on the territory of the European part of the country will basically be secured.

The chief task of the machine building zone is the intensification of its specialization in the production of products of a high technical level and the mastering of the quantity output of new designs, machines, equipment, means of automation and instruments which make it possible to utilize, on a large scale, highly-productive energy-saving and materials-saving technologies in all sectors of the national economy. The output of machinery with regard to the specific conditions of operation in various regions of the country is developing. The technical level and the quality of production in machine building, the economy and productivity of equipment, its reliability and durability are increasing. To this end, the output of means of automation is receiving accelerated development.

Of great importance is the agroindustrial complex which is being created on the territory of the European part of the RSFSR, which accounts for the basic production of grain, potatoes, vegetables, grapes, sugar beet, meat, milk, and eggs. The proportional and balanced development of the sectors of the agroindustrial complex is being carried out, its material-technical base is being strengthened, the economic relations between sectors is being improved, and there is an improvement in their interaction with respect to the build-up of the output of agricultural production, the improvement of its preservation, transportation, processing and forwarding to the consumer.

V. Udovenko: In the territorial division of labor, there is an increase in the role of the Eastern regions, whose productive forces during the entire period of socialist construction have developed at high rates. From the remote and outlying districts of tsarist Russia they have become transformed into industrially developed districts, which are playing an important role in the all-union territorial division of labor. At the present time, they account for a significant part of the all-union output of electric power, the extraction of coal, oil and gas, the production of ferrous and nonferrous rolled metal, cellulose, paper, cardboard and other types of products.

However, in spite of the accelerated rates of growth of the economy of the Eastern regions, the scales of the development and involvement in national economic turnover of natural resources are inadequate. Siberia can give to the national economy ever increasing volumes of various types of raw material and energy, and moreover with smaller social expenditures than other regions of the country.

The development of the Soviet economy requires an important change of the territorial proportions of the social reproduction between the Western and the Eastern regions.

One of the most important tasks of the 12th Five-Year Plan is the accelerated build-up of the industrial potential and the development of the natural resources of the Eastern regions, the integrated development of their economy, and the ahead-of-schedule growth of the productive and social infrastructure. What is necessary is not simply the forced development of the economy in the East, but also the formation of sectors corresponding to the most rational use of natural resources and guaranteeing the efficient processing of the initial raw material into finished production, and the reduction of transportation flows between the regions of the country.

In connection with the shift of the productive forces to the Eastern regions, the necessity of a significant expansion of their transportation links arises. In so doing, the tasks are being solved in regard to securing the development of regions being newly developed, where plans call for the extraction of raw material that is necessary for the dynamic growth of the economy of the USSR, the execution, with the least expenditures, of the massive transports of fuel and other natural resources to the European part of the country, and the attainment of effective transcontinental links of the regions. Enormous capital investments are being allotted for these purposes, which makes it possible to create solid transportation links on the Arctic Seas, railways, and the Siberian rivers for the regions that are being intensively developed.

Another, most important task of the development of the Eastern regions is the build-up of the capacities of the fuel-energy base. Its solution presupposes the development of new deposits of oil and gas, the build-up of their extraction through the application of rational systems for the development of deposits, the broad introduction of modern methods of the oil recovery from strata and the use of progressive technological processes.

In the fuel and energy complex being created in the East, the role of coal is growing. The Kuzbas is providing the basic growth of power-generating and coking coals. Other very large coal basins--the Ekibastuz and Kansk - Achinsk basins, which in the future will play a decisive role in the fuel and energy balance of the country--are also gathering strength.

The hydroelectric significance of Siberia is also great. The resources of its mighty Angara, Lena, Yenisey, Ob, and Irtysh rivers are far from fully developed, but their potential exceeds many times the capacity of all the power stations of the Volga-Kama cascade.

The projected development of the oil, gas, and coal industry and hydraulic power engineering will make it possible to bring about, during the current five-year plan, a significant increase of fuel and electric power production in the East, to increase its role in the fuel and energy balance of the country, and to improve the technical-economic indicators.

A. Levin: The Eastern regions possess various minerals: Ferrous ores, non-ferrous and rare metals, aluminum raw material, tungsten, minerals, construction materials, etc. In the 12th Five-Year Plan the development of the raw material

base in the Eastern regions will continue. The following will be expanded: The raw material resources of the existing mining enterprises, especially in the regions of the formation of territorial production complexes; the search and surveying of deposits of high-grade and easy-to-concentrate ores of ferrous and nonferrous metals, bauxites, raw material for the production of construction materials and mineral fertilizers; the scales of the construction of new and the reconstruction of existing enterprises for the extraction and processing of various types of raw material, many of which constitute the nucleus of the territorial production complexes.

An important link of the economic complex of the Eastern regions are the energy-intensive complexes, which in the current five-year plan will receive further development, in particular nonferrous metallurgy and wood processing industry. This will guarantee the improvement of interregional economic relations and a significant saving of expenditures for the transportation of fuel and electric power to the regions of the European part of the country and the Urals.

In the economic complex of the Eastern regions, the orientation of the machine building industry toward the satisfaction of local requirements is gaining strength. The expansion of the production of machines and equipment does away with the necessity of their manufacture in enterprises of the European part of the country (frequently from raw materials imported from far away) and transportation over great distances.

Special attention will be given in the 12th Five-Year Plan to the development, in the East, of industries producing food products and raw material for the light, food, and mixed feed industries. The food base of the region is being strengthened in every conceivable manner through the development of agriculture and the industries for the processing of agricultural raw material.

Such are the basic tasks of the development of the Eastern regions. In the course of the development of this region, difficulties will have to be overcome. Thus, in Siberia redundant moistening is observed, on account of which the development of lands becomes more expensive and their involvement in national economic turnover becomes more difficult. The basic part of the territory of Siberia is located in the North; for this reason additional expenditures are required to secure normal conditions for the vital functions of man. The wages are 20 to 50 percent higher than in the central and Southern regions of the country. Construction is also more expensive. The coefficient of its rise in prices in the Northern regions fluctuates from 1.2 to 2.1. Here the transportation network is still poorly developed, the extent of highways with hard surface is many times less than the average for the USSR calculated per 1 square meter.

Great expenditures for the maintenance of manpower and the high proportionate capital investments require a specific approach to the organization of production in Siberia. Questions of the order of priority and scale of the development of resources, the depth of their processing, etc., moreover, deserve special attention.

A. Simonyan: What methodical documents are used today to justify the distribution of productive forces?

V. Yevstigneyev: At the present time, methodical instructions concerning the composition, the procedure for coordination, and the approval of industrial and territorial plans and general plans are already in operation, and in pre-planning research a number of methods have been developed and are being used. In regard to the determination of the economic efficiency of the siting of industrial enterprises, the formation of territorial production complexes, etc. indicators and coefficients of regional expenditures for resources of multi-purpose use have been prepared as a unified information base for the calculation of the efficiency of production siting for all drafters of industrial and territorial plans and the general plan. Scientific-methodological, organized and information developments are conducive to a more precise justification of the efficiency of production siting and its territorial organization. However, many methodical developments of the efficiency of the territorial division of labor as an integrated system are practically non-existent. A criterion and system of indicators of the efficiency of the territorial organization of production, which is organically mutually coordinated with the criterion and the indicators of the efficiency of social production, the cost accounting practice of management and planning, have not been developed. In contemporary conditions, the justification of the general plan of development and the distribution of productive forces for the future must be based on a system of calculations of the efficiency of social production. In the development of the general plan, which is based on the industrial and territorial plans, many dozens of industrial and regional organizations and co-executors take part. It is natural that a unified mutually-coordinated system must be based on a single methodological approach, which guarantees the unity of the calculations of efficiency of development and siting of production on its various levels.

A. Simonyan: I would like to hear in greater detail about the content of the unified methodological approach to the assessment of the efficiency of production siting on the various levels.

V. Yevstigneyev: The distribution of social production, and above all industrial production, is carried out on the level of the enterprise, a group of enterprises of one industry or production sectors, an individual sector, an inter-industry complexes, a combination of all sectors of industry, etc. The assessment of the efficiency of their siting must be carried out on the basis of corresponding methods, which take into account the specific and territorial peculiarities of the projects of siting. Since these projects are elements or subsystems of a single national economic complex, the assessment of the efficiency of their siting must be effected on a unified methodological basis.

In terms of their character different calculations must be based on the basic methodological principles of the assessment of the economic efficiency of production siting, which should be carried out on the basis of the principle of the primacy of the efficiency of the national economic whole over the efficiency of the particular. This means that the distribution of individual industries, enterprises or production facilities throughout economic regions or other economic units cannot be considered efficient outside of their connection with the efficiency of the distribution of social production as a whole. The securing of their rational contribution to the economic efficiency of social production must be the result of the efficiency of production siting. The fundamental principle of the assessment of efficiency is the taking into account of the complexity in

in the solution of all questions related to the distribution of production and its territorial organization. It presupposes the integrated utilization of natural resources, the combination and cooperation of individual enterprises, and production facilities, the balanced development of the production and social infrastructure, etc. The assessment of the efficiency of siting must be based on a full calculation of the national economic expenditures for all of the most important factors that influence their formation, as well as a full calculation of the national economic results, which arise as a consequence of the realization of the various variants of the distribution of production.

The general methodological basis must stipulate unified criteria and a system of indicators for an assessment of the efficiency of the distribution of production, the methods of the calculation of indicators, and the information base.

A. Simonyan: Thus, we have examined a broad range of theoretical and methodological questions of the territorial division of labor, the efficiency of which is realized in the stage of planning and management. In connection with this, I would like to find out your opinion concerning the inclusion of pre-planning decisions, in the economic mechanism, of the work of enterprises, industry, and regions in the conditions of granting them greater independence.

A. Gladyshev: In the restructuring of the economic mechanism, as is well known, the effectiveness of the centralized management of the economy will have to be increased. Only the realization of the basic goals of the economic strategy of the party will have to be retained, the interference of the central branch and other economic organs in the operational activity of subordinated economic links will have to be stopped. The rights and independence of associations and enterprises, oriented towards the creation of conditions for the complete cost accounting, self-reimbursement and self-financing will have to be expanded. The material incentives, the system of price formation, finance, and credit, etc., will have to be improved on all levels of the national economy.

V. Levashineyev: The improvement of management must be based on the more intensive and comprehensive utilization of the advantages and possibilities of the socialist planned system of the economy, the economic laws, and on the calculation of the changes in productive forces and production relations, the optimal combination of personal interests, the interests of the labor collective and various social groups with general state interests. For this reason, above all, lucidity is needed: What should be the point of departure in solving the problem of overcoming the contradictions between the productive forces and the production relations and how are they to be solved in the territorial context? It seems that the expansion of the limits of the independence of enterprises and associations will make it possible to increase the interest of the workers in the better utilization of resources and to establish a correct system of relations between people, collectives and regions of the country in the production process, with regard to the territorial peculiarities of the socio-economic development that have taken shape.

A. Simonyan: In what consists the basic inadequacy of the territorial structure of management that has developed?

A. Gladyshev: The point is that the territorial structure of management has

shape in the conditions of the extensive development of the economy of the regions. In the presence of the attained scales of the development of social production, it has turned out to be not only complicated, but also to a certain extent one-sided, reflecting processes taking place mainly on the industrial level in the presence of the underestimation of improvements in the territorial division of labor. What has become difficult is the development of large integrated target programs, whose role at the present time is great. It must be recognized that for the time being we do not have the corresponding management subdivisions which answer their development and realization.

The structure of the management of social production that has developed reduced the possibility of a unified national economic complex to exert effective influence on the reduction of direct and indirect losses of the improvement of the ecological situation, the effectiveness of the economic and social development of a region and minimized the role of the Soviets of People's Deputies in the management of the economic development on the territory being managed by them, etc.

A. Simonyan: All this is so, but in this case we are talking about the shortcomings of the organizational structure of management by regions of the country. Now it is important to know: What has to be done concretely to solve this problem?

V. Udovenko: In the restructuring of the organizational structure of the management of the national economy on the regional level, a special role is allotted to the Soviets of People's Deputies. In the decree of the CPSU Central Committee, the Presidium of the USSR Supreme Soviet, and the USSR Council of Ministers "On Measures to Further Increase the Role and Strengthen the Responsibility of the Soviets of People's Deputies for the Acceleration of Social and Economic Development in Light of the Decisions of the 27th CPSU Congress", a complex of measures was set forth, securing the expansion of the powers of the Soviets and the increase of their responsibility for all spheres of life in their territory. The Soviets of People's Deputies were entrusted with the coordinating role in the solution of complex economic and social problems in the territory under their jurisdiction. The realization of this decree exerts an enormous influence on the intensification of the socio-economic development of the country and on the realization of the strategic course approved by the 27th CPSU Congress.

The close interdependence of the management organs is one of the most important starting principles of the organization of management in the modern stage of the development of social production. The restructuring of the organizational structure of the management of social production must be realized with regard to the specific character of the territorial level (general state, republic, and intra-republic).

At the general state level, the improvement of the organizational structure of management is connected, above all, with a radical change of the functional structure of planning and management that has developed. As a result of the intensification of the integration processes in the industrial structure of the unified national economic complex of the USSR, there is a sharp increase in the significance of large-scale aggregated industrial complexes. For each one of them, it is necessary to justify the main directions of improvement for the

long term, proceeding from the general strategy of the development of the economy.

In the production sphere, besides the existing machine building and agroindustrial large-scale aggregated industrial complexes, evidently, the fuel and energy, metallurgical, chemical, timber, construction, and transportation large-scale aggregated industrial complexes will have to be singled out. A corresponding management apparatus must be responsible for the development of each one of them. Their main function is the development of the main directions of the development of the complex in the long term, which guarantees the solution of the basic economic task and the development of external economic links. Such development will be conducive to the maximum balance of the industries that go to make up the large-scale aggregated complex and will determine the place and role of the union republics in accordance with their participation in the territorial division of labor. The industrial integrated target program should be limited by the more important indicators securing the necessary economic growth and the balance of the constituent parts of the unified national economic complex of the USSR.

The place and role of the large-scale aggregated industrial complexes and the union republics in the national economy of the country, as well as the basic indicators of economic growth, must be determined by the USSR Gosplan. We are talking about the necessary rates of growth of the national income, inter-industry and inter-regional proportions, the industrial and territorial investments being planned for reconstruction and new construction, the real indicators of the most important types of production, the growth of labor productivity, etc.

Every large-scale aggregated ministry, basing itself on the initial data received from the USSR Gosplan, works out the basic directions of the development of its complex and sends them as pre-planning documents to the appropriate subdivision of Gosplan which is engaged in the inter-complex coordination of long-term development plans.

A. Timonyan: But how should these questions be solved on the republic and inter-republic levels? In particular, how is it to be if in the republic there is no oblast division or in the USSR, which has a number of economic regions, the majority of which in terms of territory surpass a number of union republics?

V. Unovenko: In the improvement of the organizational structure of management, the special features of every union republic and its participation in the unified national economic complex will have to be taken into account.

In the stage of pre-planning developments, every republic received from the USSR Gosplan a certain range of initial indicators characterizing its place and role in the all-union production. In this case, we have in mind the indicators of the industries of union specialization, which must become the basis of the planned structure of social production in the long term under consideration.

Proceeding from the state interests and taking into account the local possibilities, the Gosplan of the republic provides scientific justification, in the industrial and territorial context, of the draft plan for the social and economic

development of the republic in the near and more remote future, which are coordinated with the republic ministries.

In the process of the preparation of the pre-planning documents and the draft plan, the intra-republic peculiarities should be taken into account. They are more complicated in the RSFSR, which unites 16 autonomous republics, 6 krais, 49 oblasts, 5 autonomous oblasts, and 10 autonomous okrugs. For this reason, it is expedient to create special subdivisions under the RSFSR Gosplan, which concern themselves with the questions of the planning of the social and economic development of the corresponding economic regions and its constituent parts (ASSR, kray, oblast). The range of the plan indicators in its totality should characterize the participation of the administrative units in the all-union and republic social division of labor. With such an approach, evidently, there is no need for the USSR Gosplan and the apparatus to select a representative in every economic region. The creation of such an organ at the local level, moreover an organ which does not possess the necessary legal status, cannot promote the improvement of the planning and management of the national economy of the economic region of the USSR.

In spite of the presence of three economic regions, in the Ukrainian SSR it is hardly systematic to create, under the Gosplan, subdivisions analogous to those in the RSFSR, above all because here production is developing from a compact territory, the various parts of which are economically interrelated. For this reason, in the justification of the draft plan for the development of the national economy of the republic for the long term, the UkSSR Gosplan should establish the main indicators for every one of its 25 oblasts and set forth their participation in the all-union and republic division of labor.

According to such a principle, it is expedient to create a planning and management structure also in the other union republics with oblast division or if their composition includes autonomous republics (in Belorussia, Kazakhstan, Uzbekistan, Kirghizia, Tajikistan, Turkmenistan, Azerbaijan, and Georgia). For the union republics without oblast division and not having autonomous republics in their composition (Latvia, Lithuania, Estonia, Moldavia, and Armenia), their Gosplans should establish as mandatory (plan) indicators--indicators for enterprises of union and republic significance, as well as determine the participation of cities and administrative regions in the development of the national economy of the republic on the basis of a narrow range of indicators.

At the intra-republic level (ASSR, oblast, industrial center, administrative region, primary link--enterprise), the organizational structure is formed by the local Soviets of People's Deputies.

A. Simonyan: The realization of measures of one sort or another in the sphere of the territorial division of labor is influenced by various elements of the economic mechanism. Which of them, in your opinion, influence the improvement of the territorial division of labor most effectively?

A. Gladyshev: Above all, the cardinal solution of the problem of the integrated social and economic development of the territory is impeded by the imperfection of the interrelations of the industrial and the territorial organs of management. The basic reason for the situation that has developed is the absence of normative and methodical documents regulating these interrelations and securing the right

granted to the Soviets of People's Deputies as organs of state power in terms of their realization. Although quite a bit has already been done in this respect, a great deal of work lies ahead that has to do with the psychological restructuring, the overcoming of parasitical attitudes, and the breaking of the ingrained habits to wait for orders "from above."

The 27th CPSU Congress pointed out the exceptional importance of the economic norms of long-term actions. Having agreed to contract obligations for the delivery of production and knowing the tasks, the profit withholding tax to the budget, the norms for the formation of wage funds, and the cost accounting incentive funds, the collectives of the enterprises are able to develop production more effectively. Apparently, the economic norms should be worked out with regard to the priority of the economic regions, as well as the development of the progressive industries in them.

Of key significance in the development of the economic methods of management is price formation. Too high prices based on the cost-oriented approach create the semblance of prosperity in the economy and give rise to the isolation of the cost indicators from their real and material content. Cost-oriented price formation is a brake on the acceleration of socio-economic development. It conceals shortcomings in the technology and organization of production and gives rise to the neglect of the search for better methods of managing the economy. For this reason, a radical improvement of price formation may become an important lever for increasing the effectiveness of the development and distribution of the productive forces and the solution of social tasks in the regions. It is necessary for the prices to correspond to the fulfillment of the food plan and to fulfill the role of its distinctive normative securing.

In the system of measures to perfect the territorial division of labor, a special role is assigned to the improvement of material-technical supply, which must become a flexible economic mechanism guaranteeing the development of the national economy of the entire country and its regions. Apparently, we should create better conditions of material-technical supply in the priority regions of socio-economic development.

The perfection of the territorial division of labor depends in many respects on the development of the system of financing that has taken shape. The conditions of the new methods of management call for the formation of relations between the budget and cost accounting enterprises and associations on the basis of stable norms. However, the mechanism of the influence of the distribution of profit on production is still insufficiently effective. The existing norms for the distribution of profit are neither long-term nor stable, but are based on national economic plans, as is also profit for the year. They--derivatives of the financial plan of the enterprises--are corrected in the course of the year, they are not brought to the enterprises in time, and they are not established for all. As a result, a large number of them are removed from the influence of the financial mechanism. Meanwhile the latter should stimulate the development of the economy in all regions in every conceivable manner, and above all in the priority regions.

One of the most important levers in the perfection of the territorial division of labor is credit. Evidently, we should think through the question of giving

credit on advantageous conditions to the regions of pioneer development for the successful realization of the social and economic tasks put before them.

And, finally, a few words about stimulation. The tendency of encompassing an ever increasing range of people in increments at the expense of the wage fund that is being observed leads to equalization and the reduction of their stimulation. There are cases of the establishment of additional payments and increments irrespective of the improvement of work indicators. A procedure must be established under which wage increments would be given for personal professional mastery. However, up to now such a form of stimulation has not received broad dissemination.

In our view, it has become urgently necessary to develop Basic Provisions for Bonus Payments to Workers of Production Associations and Enterprises for basic results of economic activity and scientific-technical achievements, after the abolition of all special systems of bonus payments that are not related to the final results of production, taking into account the priority of the selected regions.

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ACADEMICIAN RECOMMENDS APK ECONOMIC PLANNING CHANGES

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[Article by V. Tikhonov, academician at All-Union Academy of Agricultural Sciences imeni V.I Lenin: "Concept of Radical Reorganization of APK Economic Mechanism" (1)]

[Text] The year 1986 underscored the fact that measures undertaken in conformity with the decrees of the CPSU Central Committee and the USSR Council of Ministers, aimed at improving the administration of the country's agro-industrial complex, created favorable conditions for accelerating the development, regulating the structure and raising the efficiency of agro-industrial production. At the same time, factors which are inhibiting further production intensification continue to make their presence known. Thus special importance is being attached to the words uttered by M.S. Gorbachev in the Political Report to the 27th CPSU Congress concerning the fact that a conversion must be carried out in the agrarian sector over to the new methods for administration and management.

In the draft USSR law being discussed at the present time concerning a state enterprise (association), an enterprise is viewed as a socialist producer of goods and the principal features of a socialist economic mechanism are defined, features which presuppose an organic combination of centralized control over an enterprise with self control over a labor collective. Both independently and based upon a plan and agreements, an enterprise produces goods and performs work and services based upon the conditions of complete cost accounting [khozraschet], self-financing and self-administration. All of this is in large measure suitable for organizations included in the agro-industrial complex.

Principal Features of the APK [agro-industrial complex] Which Are Reflected In Its Economic Mechanism

The agro-industrial complex was formed as a multiple-branch production-economic system responsible for supplying the country's population with food and non-food goods produced from agricultural raw materials.

The creation of its branch structure was completed for the most part prior to the beginning of the 1980's. Priority importance is now being attached to the

task of regulating the form and content, operational character and the mutual relationships of kolkhozes, sovkhozes, processing enterprises and other economic organizations included in the complex and this constitutes the principal essence of its economic mechanism.

The APK has a number of important characteristics which exert a substantial influence on its economic mechanism.

First of all, each branch of the APK possesses a specific functional purpose: some obtain animal husbandry and crop husbandry products directly, others are engaged in processing these goods into final consumer products, a third group delivers the products to consumers, a fourth group performs service functions and still a fifth group supplies the entire system with the means of production. In the course of their activities, the enterprises and organizations of each branch are guided by their own economic interests and they operate separately as producers of goods. They are mutually associated mainly in a consecutive sense: each is a consumer of resources produced during a previous stage in the reproduction cycle and at the same time it is a producer of resources intended for a consumer at the next stage, that is, each enterprise simultaneously appears as a salesman for goods created and as a purchaser of resources produced.

Their production volumes are determined by the true requirements of enterprises which appear as purchasers of resources, whereas the principal operational motive of resource producers is formed as a general trend in adapting to the needs and requirements of their purchasers. Actually however, the work often turns out otherwise. Allow me to cite a typical example. More than 700,000 tons of potatoes are delivered annually to Moscow wholesale bases, a considerable portion of which has mechanical damage, is contaminated by damp earth, various diseases and so forth and thus the possibility of rotting or spoilage at the bases or in retail stores is high. As a result, more than one half is treated as waste products. According to our computations, the excess expenditures amount to not less than 150 million rubles annually, expenditures which in the final analysis must be borne by the purchasers.

Why do the wholesale bases of a city procure such products? There is a simple answer. Because they are affected by non-economic means of coercion which force them to accept everything from the suppliers, including low-grade products. The stores, which also experience non-economic coercion, accept goods from the wholesale bases which do not satisfy the retail purchasers. The latter is forced either to accept the low-grade goods or to turn to another source, particularly an unorganized market, where better quality goods may be found but at considerably greater prices.

But if no measures of non-economic coercion are present, then all responsibility for the production and sale of goods rests with those who purchase the goods for processing and sale to the population. Let us assume that the responsibility is realized in a purely economic form: the purchaser (wholesale base or store) bears all expenses associated with the acquisition, storage, processing and sale of the product and he pays for losses out of his own budget.

It is easy to imagine how this tends to change the attitude of a purchaser of salesman. A purchaser will purchase only those goods the processing and sale of which will produce for him the expected economic results, that is, the planned income. Moreover, he will not pay the price dictated to him for the goods if he can select the salesman-supplier. The price, similar to the quality of the goods, becomes an object of the trade transaction. And the salesman is forced into making adjustments to suit the purchaser and to adapt to his needs and requirements. Herein lies the mechanism which allows a consumer to exert control over a producer, a mechanism which positively forces the producers of all types of resources to adapt to the consumer requirements.

Naturally, the orientation of each enterprise towards the consumer is carried out in a contradictory manner in practical work.

Secondly, the agro-industrial complex appears as a complicated bioeconomic production system. Its central element is agricultural production, the chief resources of which include such natural resources as land, climate and weather, components of the overall bioclimatic potential for farming. The work of a farmer always appears as a process of adapting to natural conditions and the results are characterized by a high degree of uncertainty. Changes in the weather determine the need for and the inevitability of having to maneuver resources and the production structure within strictly controlled time intervals. Here special importance is attached to eliminating routine practices in the handing down of economic decisions.

The strategic basis for intensive development in farming is the principle of adaptability -- the adaptation of a farmer to nature and to changing weather conditions -- to specific bioclimatic conditions for each region.

As an objective requirement, the principle of adaptability permeates the entire system of agro-industrial production, since agricultural production is the chief source for raw materials within the APK system. Its volumes and quality constitute a fundamental base for the final operational results of the APK. Its capital producing branches (agricultural machine building, tractor construction, the production of mineral fertilizers and chemicals and so forth) must constantly change the production volumes and structure in conformity with the requirements of farming. Any deviation from this principle lowers the effectiveness of agro-industrial production, even when there is high branch effectiveness for enterprises which supply capital or provide services for agriculture. Deliveries of tractors which lack a complete set of operating machines constitute a wasteful expenditure of funds. The shipping of combines to kolkhozes and sovkhoses in September amounts to nothing more than a freezing of the investments of individual public farms and of the national economy as a whole. The production of low quality and poorly soluble fertilizers requires a squandering of funds for transportation purposes and results in a deterioration in the soil structure.

The production cycles in the processing industry must be synchronized with the time intervals of farming and the production capabilities must be coordinated with the agricultural raw material volumes and structure. The principal instrument at the present time for regulating the production volumes and

structure in APK branches -- the administrative-planning tasks, which are not always optimum in nature. Thus a relatively stable shortage of agricultural machines has developed that is resulting in less than complete workloads for the tractors at kolkhozes and sovkhozes. The production capabilities of the processing industry are lagging seriously behind the volumes of agricultural products being produced and this tends to drag out the schedules for the processing of raw materials and it is resulting in a reduction in the specific yield of final products. Many years of experience have shown that economic problems cannot be effectively solved based only upon administrative control methods.

A system is required for the economic mechanism, one which forces each enterprise and organization to adapt to the requirements of those who purchase the products being produced.

Is the formation of such a system really possible? There can be no doubt but that it is. However, its creation requires a conversion over to mainly economic methods of administration based upon responsibility being borne by those individuals who hand down economic decisions. At the same time, the enterprising nature of an economic executive must be stimulated. And this means that wilful pressure "from above" must be replaced by administrative pressure imposed upon his economic interests. The chief essence of such administration -- the centralized creation and constant renovation of those economic conditions under which an enterprise, upon realizing its interests, is forced, in the absence of alternatives, to hand down the decisions awaited by society as the consumers of its products.

Thirdly, the APK has a complicated, functional, economic and social structure. It is represented by a large number of capital-producing industrial and agricultural processing enterprises, cooperatives, associations, retail trade organizations, agricultural service organizations, scientific and educational spheres and private plots.

Capital-producing enterprises and organizations in the sphere of production services for agriculture are oriented towards a large number of relatively small consumers, whereas the final output of the APK is routed through trade organizations to millions of individual retail purchasers.

This requires special flexibility and maneuverability in forming the production structure in the interest of having it resemble more closely the structure and scales for the social requirements for each type of intermediate or final product.

Thus special importance is attached to ensuring that the economic mechanism not only requires each enterprise to respond in an efficient manner to the needs of the consumers of products, but also forces them to adapt to the effective demand, regulate the production scales and structure in a timely manner and improve the consumer properties of their products in order to raise the effectiveness of their use in the consumption sphere.

In addition to providing each enterprise with independence in handing down and implementing economic decisions, direct material responsibility, including

private property responsibility, must be established for leaders for their operational results. The state has performed for too long a period in the role of philanthropist in behalf of poorly performing enterprises and organizations. In establishing planned tasks, the state undertook to provide support in the form of material and labor resources and it guaranteed the marketing of all products regardless of the true demand for them. What was left for an economic executive? He had to manage his farm while shifting all responsibility for his operational results over to the state. This is precisely what led to a deterioration in economic relationships throughout the entire economic system.

The draft law concerning a state enterprise (association) calls for this practice to be abolished and it clearly sets for the principle -- the state is not responsible for the obligations of an enterprise: an enterprise is completely responsible for its economic results.

Combining Centralism and the Economic Independence of APK Enterprises and Organizations.

The essence of the law concerning planned proportional development of the national economy is defined as the organic unity of the need for and the possibility of planned, that is, consciously implemented and proportional management of the entire socialist economy.

Planned development assumes two mutually related functions. The first -- national economic planning at all of its levels, that is, the development of sound rates and proportions for developing the national economy based upon material and cost balances. The foundation for the entire totality of plans is a single national economic plan developed by the central planning organs. It is directive in nature. All economic organizations, in composing their own plans, are oriented towards its parameters.

The most complicated question is how is it possible, without undermining the economic independence of the enterprises and associations, to orient their activities in the directions called for in the single national economic plan such that the sum total of their plans is identified with the parameters of the single national economic plan and resembles, in terms of volumes and production structure, the volumes and structure of the social requirements for products.

The essence of the second function for planned activities constitutes the solution for this problem -- planned regulation of the work of economic organizations. This function was carried out for an extended period of time by means of a consistent apportionment of planned tasks among enterprises. This led to a weakening of and at times to the elimination of economic independence for enterprises. At the same time, there was a reduction in their economic responsibility for production results.

The conversion over to complete cost accounting, self-financing and self-administration, as called for in the draft law governing a state enterprise (association) requires another system for planned regulation. The essence of this system would be to ensure, on a centralized basis, the creation of

managerial conditions for an enterprise which would force it, for the sake of achieving more economically advantageous results, into ensuring that the volumes and structure for production and for the distribution and sale of products conform more closely to the parameters of the single national economic plan.

In the first instance, the plan was made available to an economic executive from above, as a mandatory task, regardless of the degree of economic profit from production or the sale of the product.

In the proposed variant, the planning organs do not furnish direct tasks to the enterprises, but they provide them with centrally developed economic norms for their operations -- rates for tax payments of all types, prices for the principal types of products, interest rates, norms for the formation of a wage fund, limits for centralized investments and so forth. By changing the values for these norms in a planned manner, the state regulates the economic conditions for the production and sale of products and at the same time it stimulates increases in the volumes for some products while slowing down the development of others as needed.

Under these conditions, each enterprise is authorized to plan its economic activity independently, being guided in the process by the orders from purchasers of its products, and to select the resource suppliers and purchasers. Instead of a "wasteful" distribution of resources, a free purchase-sale of resources could be introduced into operations. The suppliers and purchasers of resources are transformed into resource salesmen and customers, that is, into producers of goods, as called for in the draft law governing a state enterprise (association).

Each economic executive, under these conditions, will be forced into having to adapt to the effective demand for his products and services. Nobody will guarantee him payment for goods which are not in demand. Thus he has but one alternative for successful management -- permanent alignment of his production in terms of the volumes and structure of the social requirements for products, as expressed by the purchasers.

Centrally developed normatives may serve as regulators not only for the production of goods but also for the level of effective demand for them. With their aid, the state is systematically able to ensure a relatively stable state for supply and demand.

Instruments for the Planned Regulation of Production

The principal centrally planned economic normatives include the following:

Prices and rates. They must be formed in keeping with the socially needed labor expenditures embodied in the goods. These expenditures and the price for a product are formed as a result of opposition between two trends: the supply of a product, which reflects the average social labor expenditures for its production on the one hand and the effective demand for the product as an expression of the social need and requirement for the particular product on the other.

The establishment of the planned price must not be based solely upon the production expenses of the producer of a product, nor should the purchaser have broad opportunities for paying for goods using payment funds in the form of subsidies, price reductions covered by the state and so forth.

The prices must be free of the tax function. One must not exaggerate the stimulating role played by prices by lowering or raising the price level, since this leads to a loss of its principal functions -- measures for the value and funds for the turnover of goods.

Since they are stable, planned prices must possess the need for elasticity so as to appear as a true object of a trade transaction between a supplier and a purchaser of goods.

Ideally, there should be three types of prices: stable planned prices characterized by mobility and elasticity within the established upper and lower limits (prices for the principal and decisive types of products -- bread grain, marketable meat, whole milk) and limit prices with a strict upper limit, mainly for industrial means of production, agricultural services: freely developing contractual prices for the remaining types of products and services.

A farm or enterprise must be authorized to select the suppliers of resources. In turn, a producer must have the right to select the customer for a product. The system of planned "distribution" of resources, including deficit resources, must be abolished.

Tax payment rates. By its very nature, a tax is capable of serving as a stimulus. Firm tax rates and maximum simplicity in a tax system serve as a lever for raising the efficiency of management.

A land tax is advisable. Differentiated land rent could serve as its material foundation. Its economic essence and objective mechanism for formation and withdrawal assume the need for establishing a uniform price for agricultural products in accordance with the worst bioclimatic conditions for the production of a marketable product in the specialized zones for large-scale commodity production. Rent is withdrawn by the state from average and high quality land in the form of a land tax that is based upon an economic evaluation of the land resources. The land tax rates are established as being constant for a planned period and can be changed at the expiration of this period if a substantial increase takes place in the economic fertility of the soil during this period, while the prices for the products remain stable or decline.

The tax payment rates (excluding the land tax) must be computed in the form of a firm proportion of the farm income for the period planned.

The use of differentiated tax payment rates by types of products produced is possible so as to be able to stimulate an expansion in the production of some and, when necessary, to restrain the rates of growth in the production of other products.

In addition to the tax payments, a payment must be established for the use of non-reproducible (unpurchased) resources.

Bank interest rates. These rates can play a considerable stimulating role, but this requires the restoration of lost bank credit functions. Reform is needed in the banking system, the principal essence of which is the increasing use of cost accounting principles in banking operations. The bank system should be expanded through the creation of cost accounting commercial and investment banks, particularly Agroprombank within the APK system, with their cost accounting offices in the various regions.

The Agroprombank created with the participation of the branches, associations and enterprises of the APK must possess the measure needed for economic independence and perform the function of an intermediary in the movement of monetary funds within and among APK branches. The Agroprombank will promote improvements in the economic condition of farms and associations. The private plots and cooperative organizations of citizens can be its fully authorized participants.

Simultaneously with restoration of the function of bank credit, consideration should be given to two basically important decisions: credit, in addition to internal funds, must become the absolutely predominant form for investment within the APK system; the interest rate amounts must be raised and interest rates must be introduced simultaneously for investments in the bank of free monetary resources.

The state regulates the bank interest level taking into account the demand for credit and its availability. Ideally, the interest rates are differentiated depending upon the type of production, with credit being employed for an expansion in production. In this manner it is possible to stimulate an increase in the production volumes for some products and to restrain the rates of development for other types of products, while bringing their volumes more in line with the parameters for a single national economic plan.

Centralized investments and subsidies. These can be employed only for implementing large-scale national economic and regional programs, as a rule under recurrent conditions, and they are allocated to organizations serving in the capacity of customers in the carrying out of these programs.

Normatives for the formation of funds for payments for labor and material incentives. The formation of the wage fund requires the use of firm norms for withholdings from gross income and for the formation of the material incentive fund -- from the net income of economic organizations, after abolishing regulations on the number of workers.

The mentioned norms constitute the basic instrument for the planned regulation of the market. Overall, they tend to interact and exaggerate inadmissibly the importance of some which underestimating the value of others. It is precisely this system of norms that includes the principal parameters for the economic conditions.

An Economic Contract

The economic contract must become the principal legal document for regulating the relationships between the producer (supplier) and customer (purchaser) for a product, based upon the value norms assigned to them. The customer is authorized to select the supplier of the resources and the purchaser of the product. The contracts are drawn up during the pre-plan period. All of the conditions for interaction among the parties involved are clearly defined in them: the delivery volumes for the goods or services, their structure, the assortment, conformity to the standards, quality requirements, delivery schedules, prices and rates.

The norms for material responsibility for violation of the contractual conditions are regulated in the economic agreements. The overall principle holds that penalty sanctions are levied against the guilty side in favor of the victim. They must provide full compensation to the victim for all material damage, including lost benefits. The sanctions must be carried out in an inevitable and unquestionable manner immediately after the violations of the contractual conditions have come to light.

Economic contracts drawn up during the pre-planning period serve as the basis for developing production plans and for the distribution and sale of products. All of the plans of economic organizations constitute the foundation for the single national economic plan for APK development.

In the event of large scale discrepancies between the total number of plans of economic organizations and the computed requirements of society for particular products, the central planning organs include the mechanism for plan identification. The essence of this plan lies in a gradual merging (integration) of the appropriate plan indicators by means of corrections being made to the economic conditions for management. By changing the quantitative values for the cost norms, the central planning organs create stimulating economic conditions for some types of production and less favorable conditions for others. The purpose of this integration is to create favorable conditions for the producer for expanding production for those products required by society during a given period.

As the basis for the formation of real and tense plans, an economic contract, thanks to the identification mechanism, becomes an instrument for the development and implementation of plans.

Planning and Organizing the Production and Procurements of Products.

A single state plan for the economic and social development of the USSR for a future and five-year periods serves as the basis for all-state administration of the agro-industrial complex. USSR Gosagroprom, jointly with USSR Gosplan, develops the control figures (for a planned five-year period) for the country's APK, the union republics and also for branches included in the APK structure. The chief trends for APK development during a planned period are defined by these control figures: volumes for the production and consumption of the more important types of products; rates of growth for production and for the social development of labor collectives included in the APK structure;

volumes of production resources and investments; principal trends for scientific-technical progress; the country's overall requirements for agricultural raw materials and also its procurement volumes for the centralized all-union funds. At the same time, cost norms for management are developed for all APK enterprises and organizations.

The control figures for procuring products for the all-union fund must be made available to economic organizations in the form of a draft state order, together with the economic norms, not less than 18 months prior to the beginning of the period planned.

Considerable importance is attached to the question of the volumes of state product procurements. We are convinced that the state must not undertake the function of supplying the industrial enterprises and branches with raw materials. The raw materials must be procured independently. The purchasing of agricultural products and raw materials in regions of the country for intra-regional supply is a concern of the organs of local administration. Acting through appropriate departments and organizations, the state purchases only the volume of products required for supplying non-farming industrial regions, large industrial centers and so forth. An expansion in the supply functions of the state under modern conditions is not only unnecessary but in fact it is our opinion that it can cause direct harm, since it provides nutritious soil for administrative and economic parasitism and irresponsibility.

After obtaining the control figures for the draft order for purchasing products for the all-union fund, the republic agroproms make these figures available to the oblasts (rayons). At the same time, the proposed resource delivery volumes, with instructions as to the recommended suppliers, and also the totality of the economic managerial norms, the extent of which the republic is authorized to differentiate and correct by oblasts (rayons), are made available. When required, a plan for the formation of the republic funds for raw materials and food goods is prepared.

The draft plans developed in the oblasts are presented to the rayon agro-industrial associations in the form of draft orders, to the procurement organizations -- in the form of draft planning tasks for product procurements and to processing enterprises -- in the form of draft plans for the production of final output.

The managerial conditions are formed in the draft plans -- a system of economic norms, a list of recommended resource suppliers, service enterprises, purchasers of raw materials and products. All of this work should ideally be carried out no later than one and a half years prior to the beginning of the period being planned. After receiving all of the mentioned plans, the economic organizations commence planning their activities. The first stage -- concluding economic contracts with the resource suppliers and purchasers of the products, including the procurement organizations. The prepared and coordinated draft economic contracts are accepted as the basis for developing draft plans. The draft economic contracts and plans for the purchase and sale of agricultural products are presented to the appropriate administrative organs.

This entire procedure must be efficiently controlled in terms of time. The coordinated plan for economic activity must be made available to each organization no later than 1 year prior to the beginning of the planned period plan, such that adequate time will be available for settling the various problems with its suppliers and purchasers.

In the interest of expanding the opportunities and raising the initiative and responsibility of the local organs of administration with regard to the formation of productive capital and also for creating the conditions required for developing efficient specialization for the agricultural regions, it should be established legislatively that the local organs of economic administration bear full responsibility for ensuring that the population in their regions is supplied with food goods, through the development of the production, procurements and processing of agricultural raw materials in the various areas and also by organizing an inter-regional exchange of products. Subsidies for food goods from the all-union funds for regions having developed agricultural production should be viewed as being an exceptional measure and employed in cases of extreme need. A gradual decline should take place in the volumes of subsidies from state funds for meat and meat products, milk, eggs, potatoes and vegetables for regions of the country capable of producing these goods on a large scale.

Organization of Economic Stimulation of Labor

The system of wages under socialism is based upon the principle of distribution according to labor. A mechanical understanding of this principle lead to a spread in the practice of paying for the labor process while taking into account its amount (measured in terms of time) and quality (compared against definite technological standards).

Corrections are required in the practical use of the principle of distribution according to labor, bearing in mind that the materially needed product is the equivalent of the amount of labor needed. Hence, for all practical purposes it is not the labor process that serves as the criterion for labor income but rather the labor materialized in the product.

Payment based upon the final production results, which appears at the level of primary labor collectives in the form of a collective contract, gradually becomes the prevailing wage system.

The mandatory conditions for its successful use are formed on the basis of almost 20 years of study. These are:

- formation of a labor collective based upon personal selection in the interest of ensuring a high degree of solidarity;
- assignment of land tracts and equipment to a collective mainly for a period of not less than a complete crop rotation plan;
- permanency in the structure of subunits and as much technological independence for them as possible;

-- maximum possible minimization of the personnel structure of a collective for the purpose of ensuring mutual self-control, a high level of production workloads and appropriate earnings;

-- presentation to a collective of the right to solve independently all problems concerned with operational control of its labor activity, with intervention permitted only at those times when the collective is unable to cope with difficulties using its own resources;

-- stability of rates for output during those periods when radical changes are still being awaited in the production technology and equipment;

-- accurate observance of the agreement conditions of a collective contract, regardless of the results of the economic year (at no time should there be a change in the rates for products called for in the contract, out of a fear of excessively high earnings during more favorable years);

-- ensuring an adequately high proportion for the mobile portion of wages (final computation), with a stable value for a temporary advance, established within the wage rate limits.

A fetish should not be made of the value of the coefficient of labor participation within the wage system. Its use is conditioned by the traditional habit of individual piecework and by the fear of an unconscientious attitude towards work by some members of a collective. In a united collective of an optimum size, there is no need for employing the coefficient of labor participation. It can be assumed that as the collective contract system becomes more socially recognized and as experience is accumulated in its use based upon accurate observance of rational economic, organizational and socio-psychological principles, the need for this coefficient will disappear.

The collective contract is being disseminated with difficulty. In actual practice, it is being employed only in a formal sense in many instances. One important reason for this -- the lack of coincidence between the wage principles at various administrative levels and the contradictions caused by this fact within the system of stimuli. In order to prevent this, the payment for final results should gradually be converted into the predominant (if not the only) and ruling principle for wages at all production levels.

This requires the following:

--the wage fund should be established in the form of a firm fixed proportion of the value of the net output (gross income) sold through all channels;

-- the wages for leading personnel consists of two parts: a stable monthly advance and a mobile portion that expresses the final computation as a fixed proportion of the value of the delivered (at the level of leaders and specialists of production subunits of a farm) or net (at the level of the leaders and specialists of a farm) output;

-- to abolish the limitations on the limits for the individual level of earnings, by regulating their quantitative value for the normative proportion of the payment for the cost of output;

-- to abolish bonuses, the amounts of which are not associated with the true final results, with the exception of one-time bonuses issued to the more outstanding workers (the function of a bonus for the most part is fulfilled by the mobile part of the earnings formed on the basis of the results obtained. bonuses are employed mainly for obtaining above-plan profit in a firm fixed proportion of it);

-- the bonus funds are formed according to the criterion for profit (net income) in the form of a firm and fixed portion of it for the period planned. The bonus system for participation in profits is extended to include workers and kolkhos members .

-- to establish and to observe in a strict manner the regime for economic sanctions for violations of the contractual conditions for deliveries and other violations of planned discipline. The sanction amounts are established depending upon the loss amounts.

-- so that the system of incentives and sanctions functions in a strict manner in the absence of wilful interference by administrative figures.

Organization of Preparations for a Radical Change in the System of the APK Economic Mechanism

The period which has elapsed since the publication of the above-mentioned decree concerning further improvements in the administration of the APK economic mechanism is viewed as being the first stage in the new program for economic policy.

The time is at hand for preparing for the second stage. The essence of this stage is the creation and introduction into operational practice of a system for the economic mechanism that is based upon rejection of the system of non-economic coercion in the sphere of economic life and converting over to the use of mainly economic means of administration for the purpose of developing economic interests and socialist economic enterprise and improving, on this basis, the level of use of the socialist potential of the Soviet people in the work of developing the agro-industrial complex and raising its effectiveness.

For the purpose of preparing for converting over to the second stage, the following list of measures is recommended:

-- theoretical validation and development of an economic mechanism system for the APK, in unity with all of its elements;

-- an experimental check on the economic mechanism system in several relatively isolated administrative rayons throughout the country during the 1987-1989 period;

-- the publication in the form of an official document of the essence of the economic mechanism system. Extensive study and publication of this system;

-- a legal statute for the new economic system following its discussion and official and the official purpose of the specific period for placing it in operation. An appropriate and radical review of the norms and procedures of economic law and the required refinements in the instructions for civil law;

-- the legal introduction of the new economic mechanism system for use during the 13th Five-Year Plan.

FOOTNOTE

1. In publishing this article, the journal's editorial board invites workers attached to the agro-industrial complex and planning organs and also workers assigned to scientific institutes to participate in discussing the questions raised in it.

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CSO: 1824/230

PARTY OFFICIAL ON KAZAKH APK RESTRUCTURING PROGRESS

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 31 Jan 87 pp 1, 2

[Interview with Rysbek Myrzashevich Myrzashev, First Secretary of the Chimkent Obkom of the Kazakhstan Communist Party, by KAZAKHSTANSKAYA PRAVDA reporters K. Kim and Yu. Livinskiy: "Time for New Approaches: The Agroprom [Agro-Industrial Association]: Problems, Decisions"; first two paragraphs are source introduction]

[Text] Increasing the effectiveness of utilizing production potential, concentrating efforts and resources on the most important sections which achieve the greatest return--this was the extremely specific formulation by the 27th CPSU Congress of the priority task of workers within the agro-industrial complex. Carrying out this task requires new quality in work at all levels, the restructuring of economic concepts, and a competent approach to the problems of the village economy.

The interview between reporters of KAZAKHSTANSKAYA PRAVDA and Rysbek Myrzashevich Myrzashev, First Secretary of the Chimkent Obkom of the Kazakhstan Communist Party, deals with the subject of restructuring the agro-industrial complex.

[Question] Rysbek Myrzashevich, many people have long had the impression that Chimkent Oblast is an industrial region with developed ferrous metallurgy, chemical and machine building industries. At the same time, in the volume of agricultural production output it belongs among large agricultural regions such as the republic's northern and western republics.

[Answer] In confirmation I will say that annual production volume now exceeds 1 billion rubles in the oblast's agro-industrial complex. To a large degree the branch determines the economic potential of all of Southern Kazakhstan.

[Question] Evidently, the region's natural and climatic conditions predetermine the special features of agricultural development and demand a non-traditional approach to solving many problems?

[Answer] All of the natural-climatic zones are represented in our oblast. This is why of the 50 types of agricultural crops cultivated in this country

we cultivate over half. We produce almost all food crops, with the exception of citrus crops.

[Question] But as we know, citrus crops are produced here.

[Answer] They do not count--the quantity produced is too small. This is economically unjustified. We must always think about the cost of production and about production expenditures. For example, it is possible to cultivate melon crops not only here in the south but north of the Arctic Circle, in hothouses. But is there any sense in that?

[Question] It is this economic expediency for cultivating a particular crop that we would like to discuss first. Last year you in the oblast were forced to write off almost 100,000 hectares of grain crops due to severe dry-farming conditions. Almost half this area was in Saryagachskiy Rayon. In Kelesskiy Rayon not a single one of 19,000 hectares of crops was harvested. During the last 10 years there has hardly been an equal return on seed. For example, Berlikskiy Sheep Sovkhoz of this rayon suffered over 2 million rubles of losses from grain production during the 11th Five-Year Plan. The grain delivery plans of specialized sovkhozes are inordinately large. Even breeding plants are involved in grain cultivation. As a result, even grains are often not produced and plans dealing with basic types of products are not fulfilled.

[Answer] The situation involving grain production really is not normal here. We have 10 million hectares of agricultural lands; of these only 1.2 million hectares are arable land. We produce 80 percent of all farming products on 460,000 hectares of irrigated lands. The proportion of grains on irrigated fields, with the exception of rice and corn, is very insignificant; most grains are located on harsh unirrigated lands. Here we have a harvest approximately once every 10 years. Enterprises involved in grain production are always involved in risk.

[Question] Nevertheless you fulfilled your grain procurement plan during the past five-year plan and during the past year. It is true that if we exclude rice, forage grain makes up the largest portion of the delivered grain; the proportion of valuable wheat is insignificant and strong and durum wheat varieties are not procured. I would also like to note this paradox--while cultivating a large quantity of forage grain last year the oblast left itself only one-third of what the livestock herd required.

[Answer] Of course it is inefficient to operate in this manner. Last fall we decided on another type of risk--we decreased the area in grains by 60,000 hectares. This is why the oblast did not fulfill its plan for the sowing of grain crops. You are surprised that we intentionally chose to do this? But haven't you been surprised until now at the fact that sometimes although workers recognized the uselessness of a particular operation they went ahead with it anyway because the assignment had been made?

[Question] You worked in the virgin lands for a long time. Now you can compare the conditions for the development of the grain industry there and in the southern part of the republic. Was the effort of Chirchik workers perhaps too great in striving to make a maximal contribution at any price to

Kazakhstan's million poods of grain? They even left their livestock without the needed forage. After all, for example, in neighboring Uzbekistan almost double the volume of concentrates are expended per quintal of weight gain in cattle than here. And Uzbekistan has never been either a grain or a livestock-raising republic.

[Answer] We must speak not so much about the prestige contribution to the billion as about the existing practice of grain procurement. The enterprises of the southern oblasts are first to begin harvesting and procuring grains. And what do we harvest first? Barley. And we deliver it to the victorious end. After that we harvest wheat. Then rice and corn. With these crops enterprises complete their grain procurement plans--they fulfill the first commandment of the farmer. But when it comes time to think about forage reserves, nothing is left to stockpile for the winter in farms.

The question arises, how is the oblast going to fulfill its plan having exacerbated the situation by decreasing the area in grains? The productivity of an irrigated hectare of grains will increase.

[Question] We must hope that this is a guaranteed increase in the grain harvest! Last fall we spoke to several directors in Saryagachskiy Rayon. They admitted that in the spring they were ordered to sow barley on a large irrigated area which should have been put into corn for grain. In this way the region expanded its irrigated area in spike crops to 1,900 hectares. From this area they harvested 8,300 tons of grain, or only 400 tons fewer than they had produced on 73,000 hectares of dry-farming lands. Each irrigated hectare yielded an average of 43 quintals of grain, and barley--60-65 quintals. The average yield of corn grain comprised only 31.2 quintals and expenditures per hectare turned out to be greater by a factor of 15 than those for barley.

[Answer] This sensible initiative must be welcomed. Right now we are trying to educate directors and specialists in economic independence and in boldness in decision making. Many directors of sovkhozes and kolkhozes have turned to the party obkom with a request to permit them themselves to reexamine the structure of sowing area, the number of animals in the public herd, the system of production management and other questions which previously they did not deal with. This speaks of the fact that an active restructuring of economic concepts is going on. People no longer want to "fulfill the plan at any cost." We have needed this type of approach to management for a long time.

Already this year 30,000 hectares of spike crops will be irrigated. Crop rotations have been determined in accordance with natural-climatic zones. For example, 25 percent of crop rotations in the steppe zone will consist of fallow. In these rotations fields must be allocated to alfalfa. This will enable us to organize seed farming of this valuable protein crop. We went to the planning organs with a proposal on the structure of the grain procurement plan for the oblast. It would be economically expedient to curtail somewhat the delivery quota for grain but then to include alfalfa seed, of which there is still a shortage in the country, in the plan. We can sell at least 3,000

tons of alfalfa seed annually. Optimization with a consideration of natural-climatic and economic conditions requires other items in the procurement plan for agricultural products.

[Question] Since we are speaking about farming I would like to touch on some of the problems in cotton farming. The oblast has not been fulfilling the procurement plan for raw cotton for several years. How can this be explained?

[Answer] The oblast really was not successful in dealing with last year's plan for the procurement of raw cotton, but we did fulfill the fiber quota. Thanks to improving cotton quality, we were able to increase fiber output to 31.16 percent as compared to the planned 30.61 percent. I must say that last year for the first time the enterprises of Pakhtaarskiy Rayon made a transition in the form of an experiment to recording production according to fiber output. And they became convinced that this was to their benefit.

In general the situation in cotton farming has become much more complicated in recent years. First of all this is due to the existing practice of planning based on achievement. For example, in Pakhtaarskiy Rayon plan productivity has been established at about 32 quintals per hectare. The plan for the procurement of raw cotton has increased correspondingly. The rayon is fulfilling the plan but puts 27,000 hectares into cotton whereas the plan calls for the use of only 24,000 hectares. Incidentally, planned productivity is 26 quintals per hectare. This year we issued an order not to sow even a single extra hectare of cotton. We cannot live just for today. Nature does not tolerate careless work.

[Question] I must mention the following paradox in cotton farming. We call upon farmers to complete the harvest to the last boll but it turns out that this is not beneficial, especially under conditions of collective contracts and cost accounting. For this reason an efficient manager will not begin to gather up portions of plants and unopened unripe bolls. As a rule these items are received in the fourth quality category at 210 rubles per ton whereas expenditures for manual pick-up are almost double that amount.

[Answer] Yes, it is felt that it is unprofitable to gather the residue of the biological cotton harvest. Nevertheless, the plan must of course be fulfilled. At the same time leading enterprises and brigades fulfill the plan easily with two harvesting operations with the help of combines. Last year we gathered 75 percent of the cotton by mechanized means. Our new goal is 85 percent. This is when we will achieve the highest level of profitability in cotton farming. For mass machine harvesting high quality is necessary in the cotton fields. The quality of raw cotton will be better and this means that there will be a greater output of fiber.

[Question] At the 4th Plenum of the Kazakh CP Chimkent Oblast was subject to severe criticism for lags in livestock raising. Last year, although difficult due to the most severe drought of many years, you fulfilled the plan for the production and procurement of all types of farm products, and quality indicators in the branch improved. Can we assume that a decisive change has taken place in work?

[Answer] It is still a little early to speak about a decisive change. On a background of poor indexes in 1985 that which was achieved during the past year does look hopeful. Of course there have been changes but many shortcomings still have not been eliminated. They have accumulated over the years and this is why it is impossible to eliminate them so quickly. I would like to mention one thing in particular, though--the people working in livestock raising have the desire to achieve a decisive change.

[Question] What do you mean when you speak about the shortcomings in livestock raising that have been accumulating over the years?

[Answer] First of all, the orientation toward a non-intensive development of the branch. Let's look at sheep raising. In the oblast the sheep population was 3.2 million, and there were up to 5 million sheep in circulation. If we look at meat and wool productivity, output of young and product quality we see that these indexes are poorer today than 15 years ago. According to number of sheep our oblast is inferior only to Semipalatinsk Oblast. Eighty percent of our flock is maintained in pastures, which are located primarily in desert and semi-desert zones. Natural feed lands have practically been removed from natural rotations because they were not used systematically. Pastures were degraded. For this reason an acute problem arose involving reestablishing their productivity. Without a solution to this problem we cannot think about the further development of sheep farming, especially for karakul.

The solution to the problem has been indicated by scientists. Several years ago the Kazakh Scientific-Research Institute of Karakul Farming, together with the Chimkent affiliate of Kazgiprozem [Kirghiz State Planning Institute of Land Management], developed a technology and plan for improving pastures. In Zadarinskiy Breeding Plant highly productive pastures for year-round use were developed by means of the sowing of arid crops such as izen [not further identified], winterfat and black saxaul and the restoration of the natural grass stand. At present this area now equals 16,000 hectares in the enterprise. The area is enclosed. The productivity of feed crops on this semi-desert pasture equals 12-14 quintals per hectare. In the course of 180-200 days 30,000 ewes are maintained here. Their productivity is almost 10 percent higher than the average throughout the breeding plant. Thanks to this the enterprise annually receives up to an additional 150,000 rubles for product sales. By the end of the five-year plan the area of enclosed pastures in the Zadarinskiy Plant will equal 40,000 hectares.

Workers in Berlikskiy Sovkhoz have begun to seriously involve themselves in improving unproductive pastures. Here there are already over 3,000 hectares of enclosed pastures. Work is being carried out to sow winterfat, izen, black saxaul and other arid crops in Khodzhatugayskiy, Syrdarinskiy and other sovkhozes. I have already stated that last fall the area in grains on harsh unirrigated lands was curtailed by 60,000 hectares in the oblast. We have permitted the use of this land as enclosed cultivated pastures. Moreover, in order to develop pasture rotations we will enclose 140,000 hectares of natural lands during the year. These measures have been included in the industrial and financial plan and 6 million rubles have been allocated to implement them.

[Question] The question arises--will these considerable capital investments be repaid?

[Answer] Undoubtedly. According to the calculations of the Kazgiprozem Institute, expenditures per hectare of improved enclosed pastures in desert and semi-desert zones equal 150-200 rubles. They will be repaid in 5-6 years. The purpose of intensification of sheep raising is to direct supplementary monetary, material and other expenditures into the branch in order to raise productivity. This is also confirmed by the experience of Zadarinskiy State Breeding Plant. We must also consider the fact that the development of cultivated pastures will mean the transition of sheep raising to a new technology and a new organization of labor. Over 20 specialized brigades have been created for developing these pastures. Last fall seminars were held at Berlikskiy, Timurskiy and Dzhuvantyubinskiy sovkhoses on the development of arid pastures. After all, such pastures can be used by the fourth year. They can be utilized for 20 years without improvements. One hundred hectares will maintain one large herd for 4 months.

[Question] As in the republic as a whole, the feed problem is one of the most acute here for livestock farmers. Because of drought in Southern Kazakhstan for the second year in a row a difficult situation has developed with regard to supplying farms with forage. What kind of possibilities does the oblast have for solving the feed problem?

[Answer] I will say that there are many possibilities. They have not been utilized until now because of our own mismanagement. The oblast has 300,000 hectares of alfalfa on dry-farming land and 100,000 hectares on irrigated land. The yield we achieve is still low, and many of the alfalfa fields are old--up to 10 years old--and must be revitalized. We have established the goal of producing 2 tons of hay on dry-farming land and on irrigated land--no less than 10 tons per hectare. Then we will be able to fully supply livestock raising with coarse feeds by utilizing only alfalfa fields.

If we strengthen the feed base we will increase the productivity of livestock raising, increase production output and improve the quality of products. Our indexes for meat production were fair last year. Just by increasing the delivery weight of livestock, enterprises sold an additional 12,500 tons of meat as compared to the levels for the preceding year. But we are still lagging in milk production. The population is still not receiving the supplies it needs. In the near future we must achieve a radical decisive change in dairy farming in order to satisfy demand for products by means of an enterprise's own production. Last year we increased milk yield per cow to 2,548 kilograms, which is 272 kilograms more than during the preceding year. But the oblast must achieve a productivity of about 3,000 kilograms per cow. Last year enterprises sold over 11,000 tons of milk additionally just by increasing milk yield.

Growth in milk production will be achieved by increasing the size of the dairy herd. In order to bring it to optimal size we must increase its population by about 14,000.

[Question] Won't the problem of housing the cattle be exacerbated then? Even now there is a shortage of good facilities for animals.

[Answer] This is a problem we can solve. We have rejected the building of large feedlots where 1,200 animals are maintained under one roof. We have chosen a different path--we are building small facilities for 200 animals where the animals are taken immediately upon delivery for service.

[Question] If we speak about production reserves, evidently a great deal must be done to curtail production losses. After all, there are considerable losses because of the fact that waste-free production has not been organized.

[Answer] In the oblast there is a shortage of processing enterprises. For example, let us look at the meat and dairy industry. Right now meat is sold primarily in carcass form. Because of this a minimum of 200 kilograms of product is lost per ton of raw material. As of yet the oblast has not met the production plan for meat and there has been no shortage of processing capacities and refrigerators.

Beginning this year there will be a significant improvement in the situation involving the processing of milk. In Chimkent a new dairy combine has been put into operation. Now the opportunity has presented itself to expand the product assortment threefold.

Significant meat resources will be included in turnover thanks to the curtailment of the distance that cattle needs to travel for processing. With this goal in mind we have begun the construction of refrigeration-slaughter shops in the most distant rayons--Suzakskiy and Turkestanskiy. For example, up until now Dzhuventyubinskiy Sovkhoz has been delivering livestock in Chimkent--it transported the animals 600 kilometers, thereby losing up to 10 percent of their live weight. Now the cattle will be delivered locally.

[Question] As we know, the situation involving the processing and storage of fruit and vegetable products is no better.

[Answer] Last year the oblast's enterprises found themselves in a difficult situation regarding the sale of grapes. A great deal of them were grown and 90,000 tons, significantly more than planned, were delivered to the state. However, this cost the directors of enterprises a great deal in nerves. The grapes were sold 2 months ago, and now they can be bought only at the market because we delivered everything that we produced. We have nowhere to store the harvest. If we had refrigerators we could sell fresh grapes until May, and we could sell them at a price of 1.8 rubles and not for the fall price of 1 ruble.

[Question] Our newspaper wrote about the problems of procuring grapes and vegetable products last year during the mass harvesting period. But it did not receive an answer either from the oblast agroprom or from the republic's Gosagroprom [State Agroindustrial Committee].

[Answer] There was nothing they could say. Problems in the development of the agroprom have been tolerated for decades and it is difficult to eliminate

them immediately. It is due to these kinds of problems in planning that our oblast, a large supplier of fruit and vegetable products, has only 37 percent of the fruit storehouses it needs, 42 percent of the potato storage facilities and only 8 percent of the vegetable storehouses it requires. In the 12th Five-Year Plan, we must construct storehouses for 112,000 tons of production in all. One of the tasks we have established is to have not only enterprises of the agroprom and of the oblast union of consumers' societies but also enterprises and large industrial enterprises build storehouses in their facilities. Only in this way will we be able to solve the storage problem in the near future.

[Question] From what you have said we can draw the conclusion that restructuring in the agroprom requires knowledgeable work above all else.

[Answer] There can be no other way--now is the time for efficient, knowledgeable management. Without this we cannot achieve acceleration in work or a radical decisive change. First and foremost it is essential to strengthen divisions, farms and brigades--that which we refer to as the middle link of production--with such cadres. Right now we are placing primarily young specialists with a higher education at the head of such links and from among these we are training production leaders and heads of the labor collective. After this according to their business qualities they are promoted to the positions of senior specialists, party secretaries and sovkhos directors. This type of systematic approach is essential.

Under conditions of restructuring we, the workers of the party committee, are also examining the quality of our work and our ability to think in the new way. We are decisively eliminating from practice an armchair style of work and paper pushing. Last year not a single measure related to agroprom problems was discussed in the oblast center; instead, workers travelled to rayons and enterprises. We ourselves became convinced of the benefits of such an approach. In other words, we all must remember, as M. S. Gorbachev has said, that we must augment our work, solve our own problems and deal with our own tasks. We ourselves must seek out new approaches to problem-solving.

8228

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DELAYS IN DEVELOPMENT, DISTRIBUTION OF PLANT PROTECTION CHEMICALS

Moscow SELSKAYA ZHIZN in Russian 6 Mar 87 pp 1-2

[Article by A. Perkhov, SELSKAYA ZHIZN special correspondent: "A Flaw"; first paragraph is source introduction]

[Text] Factors delaying scientific developments and the introduction of modern plant protection agents into production operations.

The chief of the Plant Protection Administration of Soyuzselkhozkhimiya [All-Union Production-Scientific Association for Agrochemical Services for Agriculture] V.I. Martynenko continued his narration. And the picture he described was an impressive one. Over a period of more than 20 years, the areas treated with pesticides had increased from 80 to 180 million hectares. Nevertheless, the chief specialist was concerned. And he was not alone. "Dear Editorial Board! I have been working as an agrochemist for 5 years" wrote I. Kirichenko from the Kolkhoz imeni Timiryazev in Voronezh Oblast, "and throughout these years, we have fought harmful insects using chlorophos alone. We are not happy with this situation. It does not dissolve in water very well and the spraying units become clogged up. Yes and the pests have become accustomed to it. We are receiving only limited quantities of the new preparations.

Nor is the situation any better in the case of herbicides. From season to season, we are using only 2,4-D. The weeds are no longer responding to it. We are being supplied only with contact fungicides for combating plant diseases. We can only dream of receiving systemic and more effective means. Where are the modern harmless pesticides? How long must we continue to "treat" the land using old materials?

The farmers are disturbed. Hordes of pests and diseases are inflicting great harm. Each year they destroy up to 17-18 million tons of grain, 14 million tons of sugar beets and up to 6.5 million tons of fruit and berries. The losses amount to 6 million rubles.

And there is no reliable protection against them. The preparations being employed against them on the farms are not very effective. Last year, according to information which I received from USSR Gosagroprom [State Agroindustrial Committee], of 288,000 tons of pesticides produced by the

chemists, 2,4-D, the defoliant magnesium chlorate and chlorophos accounted for 100,000 tons. We are purchasing the missing amount.

Thus, why are our fields becoming impoverished and where are our domestic preparations? I visited the administrative building of VNIKhSZR [All-Union Scientific-Research Institute of Chemical Plant Protection Agents]. Silence reigns in the corridors. More than 700 workers are employed in its numerous departments and laboratories. A considerable force! I questioned a leading specialist, A.S. Sedykh, concerning the assortment of pesticides which the institute supplies to industry. Aelita Sergeyevna still recalls the forgotten DDT, which helped to destroy malaria and also hexachlorane -- which brought the locust to a halt.

But, in returning to the present time, it was revealed that the institute developed 13 pesticides during the past five-year plan. This included the systemic fungicide boletine and the contact fungicides -- boritside, kreptan, vinvitat and others. Agents were created for combating sugar beet diseases and powdery mildew in various crops. Insect-acaricides were also included among the institute's developments: domestic etaphos, geterophhos. They are effective against insects, aphids, mites and caterpillars. What fantastic names!

However, there was little reason for joy. With the exception of etaphos, they were copied from foreign compounds, for which the patents had either ended or they had become obsolete. Eight had undergone agricultural testing and yet not one had been introduced into production. With such a "scale" of development, the farmers will still have no domestic preparations even by the 21st century. Indeed, only one was introduced into operations during the last five-year plan -- oksamat repellent. I asked how such a situation was allowed to develop.

"We are concerned with optimizing the assortment of pesticides" was the reply, "and production and synthesis work are concerns of the technologists and synthesis experts."

I entered a sacred area of the institute -- the department for the study of high molecular compounds, in other words, screening. Here the scientists carry out tests on thousands of compounds that are synthesized annually at various NII's [Scientific Research Institutes], enterprises and laboratories.

"We are carrying out our studies in four directions" stated Doctor of Agricultural Sciences Ye.I. Andreyeva -- fungicides, insect-acaricides, herbicides and growth regulators. The pesticide capability is determined using special tests. And it is not an easy task to find an effective compound. Each must be tested against a broad spectrum of crops, insects and diseases.

In short, a laboratory must have practically everything at its disposal: our country's fauna and cultivated flora, insects, diseases, rodents -- the entire armada of pests that destroys the fields. A firm base is required for studying the compounds. But such a base is not available. The scientists are carrying out fewer tests in their hothouses than the average gardener.

Artificial climate chambers are lacking -- for carrying out tests on just two phytotrons. We can still only dream of having an "insect world" for the breeding of insects. Facilities for carrying out work with plant diseases are also lacking. It has become clear: the situation is not good with regard to the country's only strategically important screening operation.

Instead of equipment for their base, the scientists for a period of decades have received only promises. They have been promised genuine screening operations, buildings and excellently equipped experimental stations. The leaders of the institute and USSR Ministry of Fertilizers have issued many plans and promises. But no action has been taken.

Such lack of attention is very costly to the state. Throughout the world, up to 30,000 high molecular organic compounds are tested in order to find a new, promising and effective pesticide. Here -- only 4,500 are tested. And these are studied "in the dark" so to speak. Thus here they are unable to check thoroughly the thousands of compounds being received from other NII's and enterprises. Nor can they synthesize their own.

In the laboratory for insect-acaricides, this fact is of interest to Doctor of Chemical Sciences A.F. Grapov. Yes, very few new compounds are being produced! "Why?" asks this scientist, as he points at the laboratory equipment. The service life of the analytical scale has expired and it can no longer guarantee accuracy of measurement. The supports have been standing since the 1930's. It is as though the reactors are warmed by electric plates. Electronic equipment, which could be of assistance in maintaining the processes in the desired regimes, is nowhere to be seen here.

As a rule, the laboratory receives initial reagents for synthesis rather than pesticides -- high alcohols, super-acids or other high molecular compounds. The scientists waste time and from year to year the Soyuzkhimreaktiv Association supplies the institute with reagents such as are used for experiments in an elementary school. USSR Minpribor [Ministry of Instrument Making, Automation Equipment and Control Systems] and Minkhimprom [Ministry of the Chemical Industry] are not organizing the production of modern laboratory equipment or the means for automating it, nor are they sharing their chemical scientists with one another. Thus science is slipping and it is being followed in this respect by the practical work being carried out.

Ten years ago, a domestic insecticide with a broad spectrum of action was developed at VNIKhSZR [All-Union Scientific-Research Institute of Chemicals Used for Plant Protection] -- etaphos, which had no foreign analogs. But now this preparation is being produced abroad, while our domestic insecticide reposes on shelves. The scientists are offended by the fact that their brainchild has still not advanced beyond the plant gates. It turns out that there is no special need for "prodding" it. Indeed, the scientists are not interested in use being made of the preparations produced here. They are stimulated by the illusory "production effect" realized from a new development rather than by the effect generated by its use out on the fields.

And if the leading workers are unhappy with newly developed preparations, they turn to the planning organizations, to VIPKhSZR [Vsesoyuznyy institut proyektirovaniya proizvodstv khimicheskikh sredstv zashchity rasteniy; All-Union Institute for Planning the Production of Chemical Agents for Protecting Plants] and to other organizations. The planners have their own tasks. They must make production more helpful and more impressive. Why be in a hurry! Ten years ago, documentation was issued to VIPKhSZR for the production of a growth stimulator for plants -- gidrela. But it never reached production. The same fate befell many herbicides and fungicides. This year the planning organizations did not issue documentation for the production of piridin, sodium trichloroacetate or pentachlorophenolate. And the construction for such production operations was postponed. Thus, how can they plan?

For a number of years now, triallat, an excellent herbicide for combating wild oats, has been in production at the Sterlitamak Production Association Kaustik. Many problems existed between the plan and the technology. The plant engineers were dissatisfied with the cumbersome nature of the work and the various shortcomings and thus they changed the operations radically. Two hundred and ten units of equipment were eliminated from the technology and 123 others were prepared anew. The collective had many problems and yet they were of little concern to the planners. Before long it was proposed that the association produce a new herbicide -- yalana. It was impossible to introduce it into operations: ten new buildings were required for installing the equipment. Once again the plan was reopened. As a result, only one building is needed at the present time. This could only be viewed as being senseless extravagance.

"Good for the planners" exclaimed the scientists, "Our science is a muddle of confusion! It turns out that the institutes and branches are not associated with one another. A former branch, now VNITIGu, was recently tasked with synthesizing new herbicides. And they were eliminated from VNIPKhSZR once the laboratory was closed. Its scientists have now been shifted over to other subjects, while VNITIGu, which specialized in technologies, requires synthesis specialists. An entire trend in the branch has for all practical purposes been laid bare. The question might well be asked where the new herbicides, fungicides and insect-acaricides are to come from, since dozens of institutes of the USSR Academy of Sciences have shifted over to the creation of technologies and not to the synthesis of compounds.

In short, everything points to the fact that science and the planners must work together and be equally responsible for the final result -- ensuring that the farmers are supplied with effective preparations. Everything favors the creation of a scientific-production association that would include institutes, planners, experimental plants and enterprises. The title "Pesticide" has been proposed for it. There is a good basis for these proposals. They have long been under discussion in the branch. This vital problem can finally be solved in this manner.

An important sub-branch is operating with difficulty today. It is unable to give up its production of planned pesticides for the fields. For many years now the Volgograd Production Association Kaustik has been unable to develop the capability for producing phenozone -- required for combating annual weeds

on beet fields. The Chuvash chemists have been unable to improve the "new" chlorophos to the required condition. The production of an insecticide with a wide range of action, dilor, has come to a halt at the Pervomaysk Khimprom Plant in Kharkov Oblast. The Sumgait Khimprom Plant is experiencing difficulties in producing lindan.

Wherever one looks, the situation is the same: difficulties are being experienced in mastering imported equipment and technologies, builders are unable to carry out their work and there are personnel and material shortages. Explanations are found for all of these problems. But what is the principal cause? No firm hand is controlling the demands of the enterprises. Departmental isolation and the use of an old approach in organizing the work are also impeding progress. Pesticides are being produced by Minudobreni [Ministry of Mineral Fertilizer Production], Minkhimprom, Mintsvetmet [Ministry of Nonferrous Metallurgy] and Minneftekhimprom [Ministry of the Petroleum Refining and Petrochemical Industry] for the USSR. As a rule, the protective agents are produced in small batches and this makes it difficult to summarize results. Even in an association responsible for the production of modern preparations, in Soyuzkhimzashchita, where the nomenclature includes more than 300 products, only one fourth are pesticides. Naturally, the same amount of attention is given to them.

Let us take the Navoi Electrochemical Plant, which is responsible for producing the deficit herbicides phozalone and treflan. All of the planned schedules for producing them were disrupted. The builders failed to use 3 million rubles and thus they undermined the suppliers of equipment -- USSR Ministry of Medium Machine Building. The clients accuse the builders, the builders -- the clients and the latter also accuse the suppliers. And the construction project does not progress.

The production of dilor has come to a halt at the Pervomaysk Khimprom Plant as a result of a shortage of raw materials. The same situation prevails in the case of vitavax and other compounds. The Ministry of Mineral Fertilizer Production lacks aliphatic amines, high molecular acids, superficially active substances and other initial products. For years it has strived to have USSR Minkhimprom and Minneftekhimprom accelerate the development of their production operations, with the latter merely referring to their difficulties. And the work has slowed down. Enterprises of Soyuzkhimzashchita were often forced, together with other output, to develop their own semi-finished goods.

As a rule, the production of pesticides is small scale in nature and involves the use of unique equipment. A plan appears and the ordeal with USSR Minkhimash [Ministry of Chemical and Petroleum Machine Building] commences. Its plants are accustomed to working on series production and in large batches. And the equipping of the enterprises drags out for years. "Has this approach really exasperated those with whom the problem was discussed and is it true that the enterprises do not have enough unique equipment? The proposal was made to have the machine builders convert over to the production of modular equipment capable of rapidly adjusting to all of the new types of

chemical products. How much will it cost to equip the reactors with agitators having an assigned number of rotations? Throughout the world, a change was made over to variable units long ago, units which make it possible to conduct various processes in one unit. Let us pay attention to the recommendations.

The Khimavtomatika NPO [Scientific Production Association] of USSR Minkhimprom is complicating an already grave situation with regard to the production of pesticides. Today the enterprises have practically no analytic instruments capable of furnishing instantaneous readings on the quality of the products being obtained and the computerization of production operations is being developed very slowly. The impression is being created that everything is being held up by inter-departmental barriers. One conclusion comes to mind: the time has arrived for the interested ministries to close the gap that has been created in the production of domestic agents for protecting plants. And this should be done not by means of discussion, but rather on the basis of specific business-like actions.

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CONSTRUCTION OF OFFSHORE DRILLING PLATFORMS IN CASPIAN SEA

Baku AZERBAYDZHANSKOYE NEFTYANOYE KHOZYAYSTVO in Russian No 12, Dec 86 pp 41-43

[Article by S. A. Khanbekov, of the Kaspimorneftegazprom (Caspian Sea Offshore Petroleum and Gas Industry) VPO (All-Union Production Association), under the "Oil and the Sea" rubric: "Some Problems in Constructing MSP's (Fixed Offshore Drilling Platforms) in the Caspian Sea"]

[Text] The Basic Directions for the Economic and Social Development of the USSR for the Years 1986-1990 and for the Period Up to 2000 call for accelerated development of continental shelf oil and gas fields and establishment of a production and technical base for this purpose, including expansion of our oil and gas exploratory and development well drilling in the Caspian Sea. The document also calls for increasing oil recovery levels throughout the AzSSR in 1990 to 14-15 million t, with 70-75 percent of this recovery coming from the offshore fields.

Where during the 10th Five-Year Plan period one GMSP [deep-water fixed offshore drilling platform] was built and put into operation for drilling 10 wells with a single drill, and 3 GMSP's were built and put to work to drill 50 wells (each platform to simultaneously operate two drills) during the 11th Five Year Plan period, plans call for 15 GMSP's to be built and put into operation during the 12th Five-Year Plan period, to drill 270 wells. This requires more efficient use of existing technology and production methods which are geared to the conservation of resources.

As is well known, the pile-type mounting of the support blocks to the seafloor is done with the help of KMS's [erection crane ship] equipped with heavy load-bearing capacity cranes and steam-air hammers.

As prescribed by the plans for organizing construction operations and the work safety rules in the oil and gas producing industry [1], construction and installation operations using erection crane ships to build fixed offshore platforms are allowed where the wind is no stronger than force 4 (6 m/s) and the swells are no higher than 2 balls (0.75 m). According to data from years of observation there are no more than 117 such days per year, or 32 percent, on the Caspian Sea. This is why estimates for the usual time needed for pile work for these operations are made using a factor of 3.1.

We need to mention here that the above condition used to be in effect for operations carried out "from boats (kulaz) or other floating equipment, at the base of offshore drilling rigs" [2].

At the present time, modern erection-crane and other vessels capable of operating at wind forces and swell heights in excess of presently effective norms are used to construct fixed offshore drilling platforms, underwater pipelines and other hydraulic engineering structures.

In addition, as an analysis of periodic measurements of hydrometeorological variables for individual fields has shown, the use of a single coefficient for bad weather for all Caspian water areas is unjustified. It's more advisable to differentiate the Caspian by region and subregion.

Taking these factors into consideration when drawing up plans for organizing construction operations would help greatly in more accurately calculating the costs and construction period for fixed offshore drilling platforms (as well as other hydraulic engineering structures) out in the Caspian.

On the other hand, the technical data on the available crane ships equipped with heavy load-bearing cranes is such that at wind forces greater than 6 (13 m/s) and swells greater than force 5 (3.5 m) they must weigh anchor and reach shelter or smooth waters. The erection crane ship Azerbaydzhn, for example, has 8 anchors, so these frequently-executed operations take up a lot of time, and there is little enough time with good working weather as it is.

In addition, the frequent dropping and weighing of the ships' anchors in the deepwater fields is not conducive to preserving the integrity of the underwater lines and can negatively effect the normal functioning of the oil and gas fields.

Based on actual data, it takes 2.2-2.5 months for a crane ship to fix one support block of a double-block fixed drilling platform to the seafloor, which is about the time needed to install and anchor 24 cellar pits. Counting the installation of the unitized modules on the upper structure, the total time needed for the erection crane ships to build a single deepwater platform is 7.5-8.5 months.

Completion of planned deepwater fixed offshore drilling platform construction volumes in the Caspian for 1986-1990 requires the simultaneous operation of at least 4-5 crane erection ships equipped with heavy-duty cranes.

Taking into consideration the construction of shallow-water offshore drilling platforms (in depths of 50-70 m) and modular piers, large-block installation of drilling, operational and other equipment (for example resetting drilling rigs, installing storage tanks etc.) and the regularly scheduled shutdown of ships for preventive maintenance and repair, we need to have no less than 6-7 erection crane ships available.

The availability of this number of ships will allow us to put the planned number of platforms into operation, but will not shorten the planned construction period for each platform.

The planned construction period for deepwater fixed offshore drilling platforms fails to meet present-day requirements, retards the speed at which these oil and gas fields are developed and does nothing to improve the technical and economic indicators for constructing these facilities.

This is all the result of the poor efficiency of existing erection crane ships (even though, for all practical purposes, they operate in above-norm wind forces and swells). Thus the non-working time of the erection crane ship Azerbaydzhani in 1981 and 1982 came respectively to 50 and 40 percent of the usual annual period (22-25 percent of this down-time was due to hydrometeorological conditions).

Here, it seems advisable in the Caspian to use erection crane ships with improved technical features which will allow them to construct deepwater drilling platforms at wind forces of 7-8 (21 m/s) and swells of up to force 7 (8.5 m).

Equipping these ships with dynamic stabilizers will allow them to stay on site for the entire construction period, will reduce the number of times they must drop and weigh anchor and will also improve work safety (regarding possible damage to underwater lines).

In so doing, we will reduce the demand for erection crane ships by shortening the total platform construction period, improving the efficiency with which the ships are used and reducing downtime due to hydrometeorological conditions.

The use of the above-mentioned designs or applying them to pipe-laying barges and fire-fighting ships will improve the technical and economic indicators for constructing undersea pipelines and make the operation of our offshore fields safer.

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SAKHALIN OBLAST FIELD DEVELOPMENT DETAILED

Moscow NEFTYANOYE KHOZYAYSTVO in Russian No 3, Mar 87 pp 27-31

[Article by I. N. Sharbatova (VNII KTEP [All-Union Scientific Research Institute of Overall Fuel and Energy Problems]) and G. Kh. Yefimova (VNIPimorneftegaz [All-Union Scientific Research and Planning Institute of Offshore Oil and Gas]): "Particulars of Developing Sakhalin Oblast Oil Fields"]

[Text] Increased attention has been paid recently to prospecting and developing offshore oil fields, including those in the Sea of Okhotsk. On the basis of available data on the presence of oil and gas in the shelf it is planned in the coming years to organize the extraction of oil and gas from offshore fields in the area of Sakhalin Island, when geophysical research has revealed favorable structures for oil and gas and where there are discovered fields and genuine possibilities for expanding reserves of oil and gas.

The specifics of the geological and climatic conditions of offshore pools of oil require the elaboration of developmental methods and systems as well as planning principles. Because the formations have still not been studied sufficiently it is difficult to discuss the most acceptable systems of developing offshore fields, the approach to the separation of operating facilities, or the optimum well patterns and rates of withdrawing oil and water.

The solution of these problems can be helped by studying the experience of developing coastal fields on dry land. A knowledge of their geological and field characteristics and operating conditions will improve the reliability of estimating the recovery capabilities of offshore fields and accelerate bringing them into commercial operation by using properly effective systems of development.

Fields are being developed on Sakhalin Island, where the commercial presence of oil is associated with Neogene deposits. The oil-bearing formations belong mainly to the Okobykayskiy Suite, and less frequently to the Daginskiy and Nutovski Suite. The fields are generally confined to relatively small brachy-anticline folds, and occasionally to narrow anticline folds, extending a distance of about 25 km (the Paromay Field). All the uplifts have a nearly meridional course and are usually asymmetrical. The folds are often complicated by longitudinal, transverse, and diagonal tectonic fractures. The most

complex block formations are in the uplifts where there are longitudinal and diagonal dislocations -- the Eastern Ekhabi, Central Okha, and Paromay Fields. They are usually distinguished by rock of large-angle dip: from $50-80^\circ$ on steep limbs and from $30-50^\circ$ on gradual ones. Among the simplest and most gradual (angle of dip from $5-20^\circ$) are the Northwestern Ekhabi, Odoptu, Tungor and Kolendo Fields.

All the pools are multistratal and include from 3 to 15 oil-bearing strata lying at depths in a range between 80-2,500 meters or more. Several fields (Kolendo, Eastern Ekhabi, and Volchinka), in addition to oil pools and oil-and-gas pools, contain gas pools. The area of the oil pools mainly consists of 100-200 hectares, and less frequently of 600-900 hectares. As a rule the main part of the oil reserves contains pools with one or two strata, and at certain fields these pools have three or four strata. The systems of developing the fields are based mainly on the characteristics of the principal pools. The developmental indicators of the fields as a whole are determined by the indicators of these formations.

The authors have reviewed the particulars of the geophysical features and processes of developing 32 pools of 15 fields located along the eastern shoreline of Sakhalin Island. The features of the principal facilities are shown in brief in the table below.

The reservoir rock is sandstone or siltstone (mainly argillaceous). The productive formations are inhomogeneous (they contain clay bands, they vary in permeability, and in places they have been replaced by areas of impermeable rock.) The average effective thickness of the formations is 10-50 meters. Their average permeability varies in a wide range -- mainly from $(10-20) \times 10^{-15} \text{ m}^2$ to $400 \times 10^{-15} \text{ m}^2$ and at several facilities it has even higher values -- up to $2 \times 10^{-15} \text{ m}^2$. At several fields there has been observed a marked decrease of permeability of the principal formations from the roof portions of the pools toward the periphery.

The viscosity of the oil under formation conditions also varies in a wide range between $0.6 \times 10^{-3} \text{ mPa/second}$ and $(250-280) \times 10^{-3} \text{ mPa/second}$. About half (15 out of 32) of the pools examined contain oil with a viscosity less than $5 \times 10^{-3} \text{ mPa/second}$, six pools have oil with a viscosity less than $(5-30) \times 10^{-3} \text{ mPa/second}$, and 11 have oil with a viscosity greater than $30 \times 10^{-3} \text{ mPa/second}$. Some connection has been observed between the viscosity of formation oil and the permeability of the reservoirs [1 and 3]. Virtually all pools examined with oil of lesser or greater viscosity are associated with formations having a permeability of about $400 \times 10^{-15} \text{ m}^2$, and half of them are characterized by formation permeability less than $100 \times 10^{-15} \text{ m}^2$. At the same time almost all wells with high-viscosity oil are confined to formations with permeability greater than $100 \times 10^{-15} \text{ m}^2$, and more than half to formations with permeability greater than $400 \times 10^{-15} \text{ m}^2$.

Pools of high-viscosity oil are confined to shallow depths (80-700 m), which makes them accessible for the use of thermal methods.

The initial formation pressure of the pools corresponds to the hydrostatic. For all pools the bubble-point pressure is the same as the initial formation pressure or very close to it. All the wells examined are oil wells, with the exceptions of the Formation XVII pool of the Kolendo Field, which has a considerable gas cap, and Formation XIV of the Northern Okha Field.

Highly viscous and viscous oils are characterized by low gas solubility ($3-4 \text{ m}^3/\text{MPa}$ per 1 m^3 of oil). Oils with viscosity less than $(1-2) \times 10^{-3} \text{ mPa/second}$ have the highest solubility (up to $10 \text{ m}^3/\text{MPa}$ or more per 1 m^3 of oil). Correspondingly, the initial gas content of the oil depends on its viscosity and the depth of the pool's occurrence, and varies from unity to $200-300 \text{ m}^3/\text{m}^3$.

The physical geological characteristics shown for the fields and the hydrogeological properties of the area foreordain low effectiveness for the pools' natural drives. Gas-solution drive is the mark of pools with oils of lesser or greater viscosity. High-viscosity oils have very low kinetic capacities, and with considerable angles of dip their drive is close to the gravitational.

From the 1920s to the mid-fifties all the Sakhalin oil pools known at that time were developed by using natural drives. The flooding method began to be used from the mid-fifties. Flooding has been adopted on a commercial scale at 16 facilities with permeability greater than $(80-100) \times 10^{-15} \text{ m}^2$ and a viscosity of formation oil less than $30 \times 10^{-3} \text{ mPa/second}$. Because of the small size of the pools contour flooding is preferable. However, at facilities where there is low permeability of the formations at the periphery of the pools or the tectonic structure is unfavorable for contour flooding, various types of intra-contour flooding are used (Kolendo, Northwestern Ekhabi, and Mongi) [2]. At the majority of the fields flooding has been introduced after withdrawal of a considerable part of the reserves. The pools are developed under conditions where bubble-point pressure and formation pressure are the same. The flooded facilities are therefore developed by the procedure of driving out gas-cut oil with water.

As a rule, pools developed by flooding are drilled in a pattern with a density of 9-16 hectares per well. The wells' initial yields of oil vary between 0.3-10 and 50-300 tons per day. The pressure of water injection is from 8-15 MPa, depending on the depth of the occurrence and the permeability of the formations. The intake rate fluctuates in a quite wide range and reaches the maximum (800 m^3 per day) in the Kolendo Field.

The time of introducing the water injection process greatly affects the dynamics of oil production in fields developed by flooding (Figure 1). In the fields of Western Ekhabi flooding is employed after the withdrawal of a considerable part of the reserves being extracted. The maximum annual rate of oil production at this field was achieved under conditions where natural drive was acting on the pools, and therefore it was low. Prior to flooding the

field had entered the final stage of development, i.e., production at it had fallen sharply. The use of flooding made it possible not only to halt the drop in production but also to increase it, and after that to maintain the level (not very high) that had been achieved.

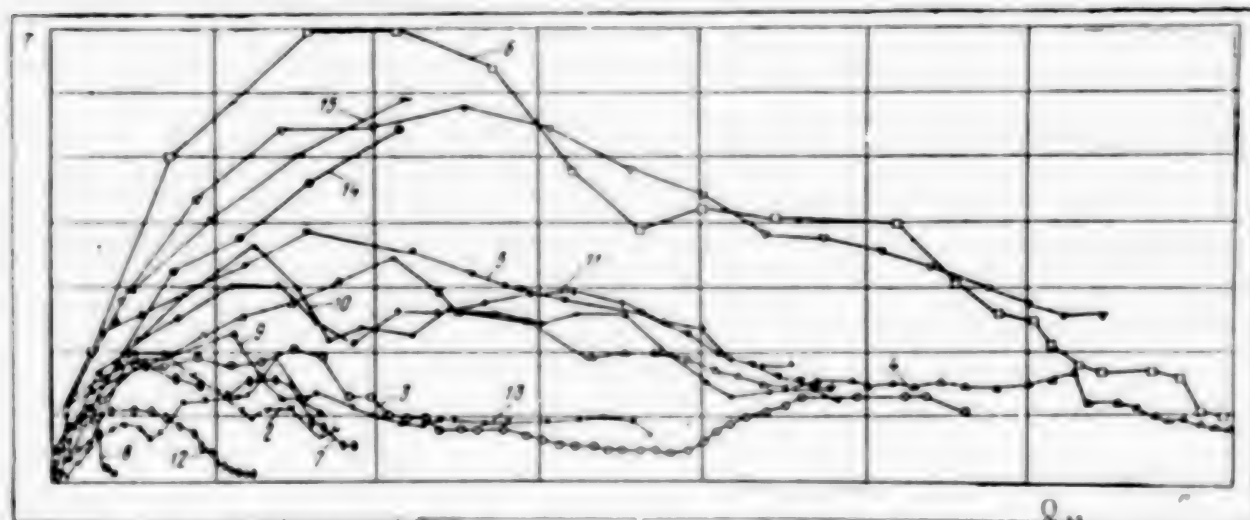


Figure 1. Relationship of Oil Withdrawal Rates T to Degree of Development of Pools Being Worked Q_w (Arabic numerals correspond to the facility numbers shown in the table above)

At the Eastern Ekhabl, Tungor, Mukhto, and Western Sabo fields flooding was employed after withdrawal of some part of the total reserves being extracted. It also achieved the maximum rates of oil production, and the drop in production began under conditions of natural drive of the pools. However, at the start of flooding there was an initial phase in which production dropped. The employment of flooding made it possible to sharply retard the drop in production, to stabilize it for a long time, and even to continue its growth. For the fields of this group in the third stage production rates were higher than with later introduction of flooding in other pools.

At the Kolendo [2], Odoptu, Nabil, and Mongi fields flooding was introduced in the very first years of development. Two of them are now in the final stage of development and two are in the second stage. The employment of flooding from the start of development made it possible for almost all the fields to achieve the highest rates of oil production, and therefore to shorten the fields' developmental life.

The development of fields by flooding is accompanied by increased water cut (Figure 2). With low oil viscosity, regardless of when flooding was begun, the initial stage of development proceeded with low water content in the output. After working a considerable portion of the reserves, which for virtually all pools took place in the period of flooding, the water cut of the output increased. For a long time each additional percentage point of oil content is accompanied by an average increase in water cut of about 3.5 per-

cent. When the water cut reaches 75-85 percent (an oil output of about 35 percent), a flattening of the water-cut curves has been observed, which is evidence of the possibility for a further substantial increase in oil content up to 45-50 percent or more.

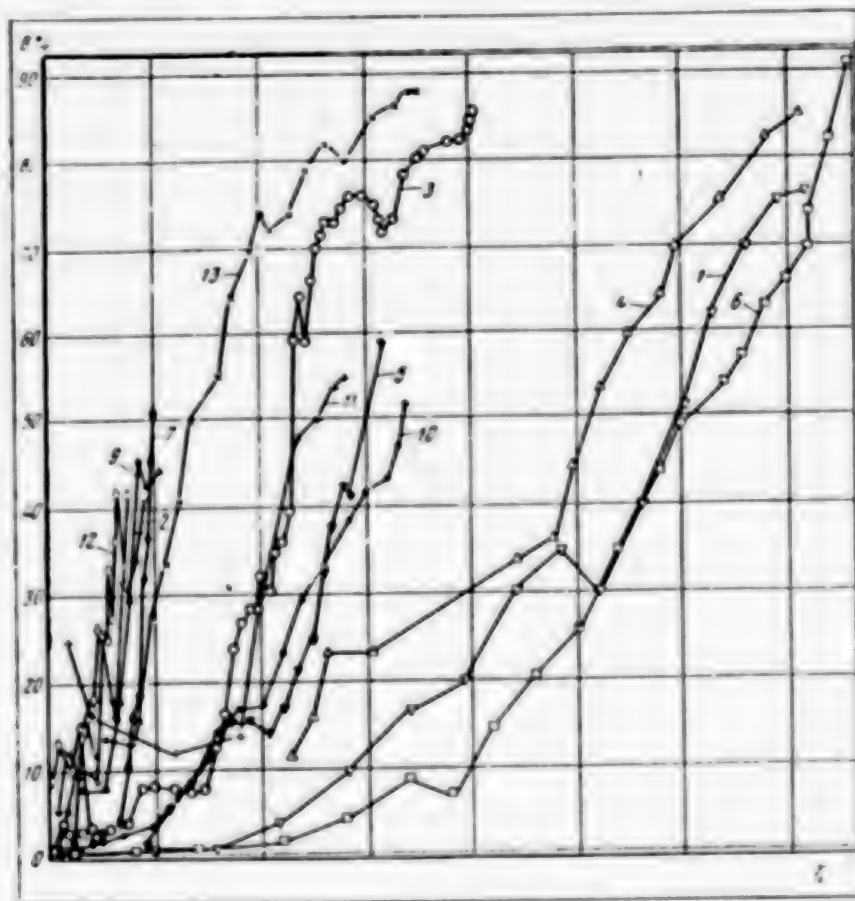


Figure 2. Relationship of Oil Yield n to Water Cut B
(Arabic numerals correspond to the numbers
of the facilities shown in the table above)

For fields of oil with increased viscosity growth in water cut of the output occurs at the very start of flooding, since its rate is higher than for low viscosity oil. With a water cut of 55-65 percent flattening of the curves has not yet been observed. For pools of this group, because of the dynamics of water encroachment of the output, the oil content with flooding may reach 35-40 percent.

Portions of the fields are being developed without flooding. Where oil viscosity is low flooding is impossible if there is strong tectonic fracturing of the formations, even if the physical characteristics of the reservoir are favorable for flooding, or if the permeability of the formations is very low. For these reasons, the flooding process has not been introduced at the Northern Okha, Paromay, or Volchinka fields, which are being developed with solu-

sion-gas natural drive. Production here is therefore being achieved at very low rates. Despite the prolonged period of development oil output here has only reached 5-15 percent. From the very start oil production was achieved under conditions of intense growth of water cut of the output, which is not typical of solution-gas drive. The water drawn off does not serve the replacement function of driving the oil out of the formations. Apparently, the water travels from the area beyond the contour through highly permeable narrow bands, through tectonic fractures because of poor quality cementing, etc. This problem requires special examination.

Pools with high-viscosity oil are also being worked without flooding (the Nelma and Katangli fields and others). Because of the pools' poor natural kinetic properties for natural drive, they are operating at low efficiency. Their oil content is measured in single-digit percentages.

In recent years considerable experience has been amassed on Sakhalin Island on the use of thermal methods at fields and particular facilities with high-viscosity oils where the productive formations do not occur at great depths. At the Central Okha and Katangli fields they are using the methods of steam injection followed by driving its fringes with cold water. This process uses a denser well placement as compared to flooding. The interval between wells is from 40 to 200 meters. The injection of steam into a formation is combined with thermal treatment of the well bottom zones of the producing wells. While in the lengthy preceding period of pool development under conditions of low-energy natural drive oil content did not exceed 15-17 percent, the use of thermal methods has made it possible to increase it to 45-55 percent.

The use of thermal methods has sharply intensified development and increased the rate of oil withdrawal by a factor of 1.5-2 or more in comparison with the maximum withdrawal with natural drive. And the development of pools with high-viscosity oil is accompanied by a less intense growth in the water cut of the output.

Examination of the particulars of operating the Sakhalin Island fields enables one to make some proposals in the possible conditions of commercially developing oil fields on the shelf. Apparently we will have to deal with multiformation fields with a quite complex tectonic structure and a wide range of average pool parameters.

Like the fields on land, the shelf fields in the area of Sakhalin Island will probably be typified mainly by solution-gas natural drive (for low- and average-viscosity oil) or (to a lesser degree) will have insignificant kinetic properties (for high-viscosity oil).

For pools of oil with viscosity of $(30-40) \times 10^{-3}$ mPa/second and permeability of more than $(80-100) \times 10^{-15}$ m² and a relatively simple geological structure, flooding can be used to achieve satisfactory developmental indicators. However, we must be prepared for the fact that virtually from the start of development oil will be withdrawn from pools with high-viscosity oil (more than $(5-7) \times 10^{-3}$ mPa/second) under conditions of intensely increasing water cut.

16 № п/п	17 Месторождение	18 Основные горизонты	19 Глубина залегания, м	20 Проницаемость, 10^{-15} м^2	21 Вязкость пластовой нефти, $10^{-3} \text{ мПа} \cdot \text{с}$	22 $P_{\text{пл}}$, МПа	23 $P_{\text{бис.}}$, 10^{-1} МПа
1	Колендо	XVII	1450	90	2,5	155	155
2	Северная Оха	XIV	550—1020	23	7,0	62	
		XVII—XIX	1185—1440	10	1,7	113	
3	Центральная Оха	3	80	2000	250,0	8	
		4	210	690	97,0	16	
		7	314	100	88,0	27	
		8	350	50	138,0	29	
4	Северо-Западное Эхаби	XIII	640	79	1,5	60	58
		XIV	670	63	1,5	63	57
5	Восточное Эхаби (поднадыт)	17	686	410	21,0	64	64
		20	950	390	15,0	90	90
6	Тунгор	XX	2100	80	0,8	210	208
7	Нельма	II	650	146	60,8	65	65
		XVI	1900	176	0,7	187	187
8	Волчинка	XX	1730	250	1,1	180	180
9	Одопту	XXI	2300	65	0,8	212	210
10	Западное Сабо	III	1050	510	280,0	109	109
		VII	1200	400	110,0	122	122
		X	1350	5—1285	15,4	132	132
		XI	1400	128	13,0	143	110
11	Мухто	Д,	820	335	10,4	78	78
		Ж + 3	890	22—744	5,0	72	72
		И	850	22—531	2,0	79	79
12	Паромай	XI	1100	18	0,6		
		XII	1300	17	0,6		
13	Катангли	I	120	580	Высокая 2,4		
		II	135	940	"		
		III	160	630	"		
14	Набилъ	I	700	19	50,0	68	60
		XX	1800	7	0,5	183	173
15	Монги	IV	1930—2450	140	0,8	190	190
		V	2100—2500	110	0,6	211	211

Key:

- | | |
|-------------------------------|--|
| 1. Kolendo | 15. Mongi |
| 2. Northern Okha | 16. Item No. |
| 3. Central Okha | 17. Field |
| 4. Northwestern Ekhabl | 18. Principal strata |
| 5. Eastern Ekhabl (subthrust) | 19. Depth of occurrence, in meters |
| 6. Tungor | 20. Permeability, 10^{-15} м^2 |
| 7. Nelma | 21. Viscosity of formation oil, $10^{-3} \text{ мПа} \cdot \text{с}$ |
| 8. Volchinka | 22. Formation pressure, 10^{-1} МПа |
| 9. Odoptu | 23. Bubble-point pressure, 10^{-1} МПа |
| 10. Western Sabo | 24. High |
| 11. Mukhto | |
| 12. Paromay | |
| 13. Katangli | |
| 14. Nabil | |

For low-viscosity oil there will be no water in the initial period of development, and the intense growth in water cut will start after the withdrawal of part of the reserves being worked.

In preparations for development of the shelf special attention must be paid to pools of oil with viscosity above $(30-40) \times 10^{-3}$ mPa/second and with reservoirs of low permeability and a complex tectonic structure, since flooding is not effective for these. Without stimulation of the formations it may not be economically feasible to develop these pools under offshore conditions, since even with a dense well pattern the levels of oil yield and oil content will be very low. The use of thermal methods for pools of high-viscosity oil occurring at shallow depths calls for special technical solutions. For productive formations not suitable for traditional flooding effective methods of stimulation must be developed and technical preparations must be carried out to implement them.

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CONSERVATION, USE OF SOLAR ENERGY VIEWED

Kishinev KOMMUNIST MOLDAVII in Russian No 11, Nov 86 pp 59-64

[Article by V. Chemortan, candidate of technical sciences: "Economics: Growth Through Acceleration -- Resource Conservation and the Use of Solar Energy"]

[Text] At the present stage of the development of our country, an active energy conservation policy as one of the most important factors in intensifying public production and increasing its efficiency has gained a greater role and significance. The Basic Directions for the Economic and Social Growth of the USSR in 1986-1990 and the Period up to 2000 sets specific tasks for turning energy conservation into the decisive means of covering our economy's growing need for material, fuel and energy.

Our republic has very limited energy resources. At the present time, hydroelectricity, firewood, and agricultural and industrial by-products which are also used as energy sources meet about one percent of the economy's demand for energy and basic needs are met by importing various types of mined fuels. The decisive directions for lowering industrial energy consumption are a policy of energy conservation and finding new ways to save fuel.

In the USSR's energy program which has been developed to meet our needs well into the future, energy conservation is supposed to be achieved through accelerated scientific and technical progress in all areas of the economy and everyday life, the utmost economy of fuel and energy use, enhanced technical efficiency of all types of energy-consuming equipment, use of by-products and the discovery and use of new and nontraditional forms of energy. Among the new forms of energy that science and technology are today working to develop are nuclear energy, hydrogen energy from electrical hydrolysis of water and others which still require the resolution of many complicated scientific and technical tasks. Better known are other nontraditional renewable energy sources such as solar, wind and geothermal energy which exceed by many times the heat-generating abilities of all other known forms of organic fuel on our planet. Nevertheless, work on the practical employment of these energy sources was only begun in the last few years and there are still many scientific, technical and economic tasks that must be solved before these forms can be put to use.

The last 5-year period saw the adoption of a series of important trend-setting documents calling for basic measures for improving the efficiency of technological equipment, introduction of energy-saving technologies, reduction of fuel consumption and loss, improvement of the use of energy by-products and the use of renewable energy sources in the national economy in 1981-85 and the period up to 1990. Our republic among others was assigned the task of conserving organic fuel through the use of solar energy to save 190,000 tons of standard fuel in 1986-1990 and 45,000 tons in 1990. In other words, the republic's allotment of coal, natural gas, fuel oil and other types of organic fuel from national resources will be cut by these same amounts.

The basic factors determining our ability to use this form of energy are the amount and duration of solar energy reaching the Earth. Moldavia is situated at the southwestern edge of the USSR and lies between 45 and 48 degrees latitude north which gives it good natural and climatic conditions for using solar energy. It receives an average of 2165 hours of sunshine per year which may range from between 2060 hours in the north (Brichany) to 2330 hours in the south (Bulkaneshti). The number of sunny days per year ranges from 150 in the north to 220 in the south. Furthermore, the number of cloudy days in which solar energy can also be generated are 100 in both the north and south. Consequently, solar energy plants can operate for 250-320 days per year. The yearly amount of solar radiation fluctuates between 100-113 kcal/cm². This generally increases from north to south and the maximum intensity of 0.9-1.06 cal/cm²/min occurs during summer.

According to specialists, the use of solar energy is justifiable when solar radiation is no less than 0.6 cal/cm² on sunny days over a period of no less than 6 hours with the average number of clear days being no less than half the number of overcast days and an average cloud cover not exceeding 60 percent. Therefore, the natural and climatic data indicates that the solar conditions throughout the republic satisfy these requirements in full. Although solar energy is very diffuse, it is convenient to use because it can easily and cheaply be adapted to a great number of needs and because it does not create any form of environmental pollution. Solar energy can be converted into thermal, electrical, biological, chemical or mechanical energy.

The production of electrical energy from sunlight is a most promising option. One method of converting solar energy involves generating steam with a system of mirrors focusing the sunlight onto a boiler on a high tower. The generated steam is directed into a turbine which drives an electrical generator. This principle was used in the 5000-kW experimental Crimean solar electrical power plant built in 1985 and a series of similar plants in the United States, France, Spain and Japan. In Uzbekistan, a 300,000-kW solar power plant is being built in Uzbekistan and efforts are also underway to build similar plants in other parts of the world.

Still another means of generating electrical power from sunlight involves the use of solar photo-electric stations. The photo-elements used at these plants convert solar energy into electricity and such stations are presently used on spacecraft. Their efficiency factor does not exceed 10-15 percent at this time. There already exist small power installations with a capacity of 0.2-

1.0 and more kilowatts. However, the high cost of photo-elements makes these installations very expensive. Mass production of these installations could reduce their costs 20 times and that would make them competitive with other generating systems, especially in meeting the needs of independent consumers. Nevertheless, solar installations for the generation of electrical power are technically more complicated, harder to build and too expensive in comparison to conventional power plants, so it is still too early to talk about extensive use of this technology.

Solar heating is the most well-developed use of solar energy both in the USSR and abroad. This is first of all because the conversion of solar energy to heat energy has had the most research at this time and second, the installations that can convert solar energy in this fashion are relatively simple to design, inexpensive and can be effectively used in all branches of the economy.

In the USSR at this time, a large number of solar installations have been developed and tested. However, the most feasible ones for practical use are low-temperature (up to 100°C) designs that utilize flat solar collectors. A collector is an insulated box painted black on the inside and covered at one end by one or two layers of clear glass and then tilted at an angle to the sun. If the upper and lower walls have openings, then cool outside air enters the openings, is heated in the interior of the collector and then exits the upper openings. Collectors are used in various drying apparatus to dry fruit, vegetables and pulverized materials and to heat buildings.

If pipes or a boiler made of two sheets of corrugated steel are placed inside of a collector and are painted black, then water passing through them from bottom to top can be heated to 60-70°C. The heated water can be used at once or collected in a tank for later use.

Due to the simplicity of solar collectors, many enterprises make them themselves. Meanwhile, they are presently also being tested for industrial series production. The best-known industrial models are those being produced at an experimental factory of the Kiev Zonal Scientific Research and Standard and Experimental Design Institute and the Bratsk Heating Equipment Factory. The housing of the first of these two models is made of formed aluminum while that of the second is made from stamped steel and they cost 50 and 37 rubles, respectively. One collector can produce an average of 75 liters of hot (60°C) water per day and save 0.2-0.3 tons of reference fuel per year. Such collectors can be arranged in parallel lines to produce any given amount of hot water.

In Moldavia, a certain amount of experience has been gained in designing, building and operating solar heat generators in pension homes, summer vacation camps and homes, children's summer camps, kindergartens, residential housing, public buildings and factories. For example, the Moldavian State Institute for Urban and Rural Construction Design designed in 1975 a 79-bed summer pension home on the Dniestr River in the village of Molovata of Dubossarsky Rayon which included a solar water heater for showers and the kitchen. The unit took up 63 square meters of space and included a 4.4-meter hot-water

tank. This unit was constructed and started up in 1976 and has ever since then been operated in summer to save fuel needed for hot water.

The same institute has developed designs for solar heaters for children's pioneer camps in the villages of Sadovo in Kalarashsky Rayon and Ulna in Kutuzovsky Rayon, the "Azure Coast" pension home in the Koblevo vacation region, kindergartens in Ungensky and Novoanensky Rayon and residential housing and apartment buildings in Orgeyevsky, Komratsky and other rayons.

Special interest has been attracted by the mansard-type two-story, four-room home in the village of Bukuriya in Kagulsky Rayon which was built in 1983. Its solar installation consisting of 120 collectors made by the Kiev Zonal Scientific Research and Standard and Experimental Design Institute is designed to provide hot water and heating year-round. For this purpose, it has a two-pass heating circuit with a heat pump and electrical back-up system. The first and outer pass uses ethyl glucole which will not freeze in winter. A 16 cubic meter storage tank was built into the house's foundation. The amount of electrical energy saved during the heating season alone is estimated at 9000 kW/hrs. Furthermore, solar energy alone provides all the hot water needed during the summer. There are many other buildings with solar systems developed by other design institutes and organizations such as the Moldavian State Construction Design Institute, the Collective Farm Construction Design Institute, the Moldavian State Water Management Design Institute, the Moldavian Communal Design Institute and the Power Cybernetics Department of the Moldavian Academy of Sciences.

However, it must be pointed out that most of these buildings with solar systems have only been designed and were left unbuilt for various reasons. The first reason is that their construction requires additional financing because the construction costs are usually 15-20 percent higher than those of conventional heating systems. Second, up to now, there has been a shortage of sufficient quantities of reasonably priced collectors and other equipment. At the present time, the situation is improving. In 1986, the republic received 5000 square meters of collectors which are being distributed by Gosstnab of the Moldavian SSR to every ministry or department that requests them. Furthermore, the start of mass production has considerably reduced the cost of collectors. Whereas two years ago a collector from the Bratsk factory cost 123 rubles, they now cost only 37. As collectors begin to be used more extensively, their prices should go down even more.

Cooling is another promising use of solar energy because it is in the greatest demand during periods in which solar radiation is most plentiful. Furthermore, the regions that most need cooling during the summer are those like ours that have the most solar radiation. Such cooling can be provided by solar consumer and industrial refrigerators, fruit- and vegetable-refrigerated storage as well as air-conditioning systems in factories, public buildings and homes.

There are a large number of ways in which cooling can be produced. However, in utilizing solar energy, the most common forms are compressors, ejector and absorption refrigerators. Solar refrigerators that use solar heaters with mirror condensers and "hot box" solar collectors are different. The former

has a greater daily cooling output. A refrigerator's output can be increased by increasing the area of the solar collector and the size of the cooling chamber and other elements. In Uzbekistan, a simple design for a solar refrigerator has been developed. It includes a two square meter solar collector and an 80-liter refrigeration chamber with an average temperature of -5 to -6°C .

Combined systems of solar heating and cooling (providing hot water, heating and air conditioning) consisting of a solar unit operating with a heat pump are worthy of interest. In this case, the water heater can at any intensity of solar radiation provide a source of low-potential heat for the heat pump. The efficiency factor of such a system is 8-10 percent higher than one without a heat pump. Considerable energy can also be saved by building combined fuel-fired and solar boilers and electrical-solar boilers. Calculations have shown that solar systems for hot water, heating and air conditioning can use as much as 70-75 percent less fuel than conventional systems during the summer period.

Plant cultivation in the protected soil of greenhouses and hothouses is increasing each year in Moldavia. As much as 70 percent of the cost of greenhouse production goes to fuel costs for heating and for that very reason, solar energy is especially useful for this purpose. Despite the fact that greenhouses and hothouses have a transparent, insulating pitched roof oriented toward the south, they are equipped with a heat accumulator in the form of air ducts usually made of ceramic material under an earthen bank which adjoins them from the northern side of the structure. In the day, the accumulator gathers the sun's warmth from the air which it then uses to heat the greenhouse at night by means of thermosiphoning. The fuel saved per hectare of greenhouse area is 400-500 tons of reference fuel per season and the cost of the plants grown in such greenhouses is almost half those of fuel-heated greenhouses.

The drying of agricultural and industrial products is one of the energy-intensive processes which consumes much liquid fuel, firewood, natural gas and thermal and electrical energy at this time. The use of solar dryers makes it possible to dry in one shift as much as 5 kilograms of fruits or vegetables per square meter of solar collector, to cut in half or more the time needed to dry grain, hay and other agricultural products and to save a considerable amount of fuel and energy. Solar tobacco curing barns are especially effective. In comparison with open-air curing barns, they can cure 2-3 times more bright tobacco with better quality. Combined solar greenhouses and drying rooms which are used as greenhouses in spring and drying rooms in summer are very effective.

Domestic and foreign experience has shown that solar energy installations can also be very effective in desalinating mineral waters, curing concrete structures, pulse concentrated radiation of plants and animals, medical treatment, food preparation, lifting water, cathode protection of pipelines, powering automobiles and aircraft and other purposes. In Moldavia, solar heating with back-up systems can be widely used to provide hot water to homes and hospitals, vacation homes and sanatoria, sports facilities, children's and tourist's camps, public baths and laundries, rural barbershops, cultural, public and educational buildings, tractor shops and construction brigades at

state farms and to livestock farms, etc. Calculations have shown that the use of solar installations to cover only 5 percent of the republic's projected demand for hot water and heat could save 1.2 million tons of reference fuel or 47.6 million rubles.

The 12th 5-Year Period has just begun, therefore in developing comprehensive branch programs for intensification of public production and increasing the efficiency of the use of materials, resources, fuel and energy, we must also consider the use of solar and wind energy as well as other means of energy and fuel conservation. It would be appropriate for the republic to develop extensive research and experimental work to create combined solar hot-water, heating and air-conditioning systems, greenhouses and hothouses with heat accumulators, solar drying rooms, to test existing structures under the natural and climatic conditions of Moldavia and to introduce the use of approved designs. These goals could be furthered by the creation of an interindustrial laboratory or science enterprise with specialists from various disciplines, scientists, designers and workers skilled in the manufacture, assembly and installation of solar systems. Due to their simple construction, most solar systems could easily be manufactured in the republic. Design institutes would be able to employ existing and typical designs for various buildings with solar systems and especially the designs for individual houses with solar heating and power systems that have been developed by the Tbilisi Zonal Scientific Research and Standard and Experimental Design Institute.

The sun gives us its energy for free but it is up to us to decide how we will use it and when we will fulfill our tasks to conserve energy in the republic's industry.

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LEGAL EXPERT FAVORS ELECTIONS AT ENTERPRISES

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 3 Mar 87 p 2

[Article by Prof Ye. Torkanovskiy, doctor of legal sciences: "Competition Between Ideas Rather Than Forms"; first paragraph is SOTSIALISTICHESKAYA INDUSTRIYA introduction]

[Text] Let's be frank: It's one thing to talk about the principle of elections in general and about introducing the elements of democracy into management in general, and an entirely different thing to feel that tomorrow, your activities are to be assessed not by a supervisor--one to whom you have managed to adapt over many long years, but rather by the labor collective, the possible reaction of which to your activities you had not concerned yourself with before. This is probably the explanation for the passions aroused during the business meeting of the USSR Academy of the National Economy reported in SOTSIALISTICHESKAYA INDUSTRIYA on 17 February 1987.

It seems to me that some of the participants of the meeting doubt the principle itself of elections, though they would not say so openly. But that is what is behind their proposals not to extend this principle to certain categories of executives (at least for now, of course), to extend the time of the elections as much as possible, to appoint an overseer to the collective who would correct its actions if it tries to elect "the wrong person," and so on. The controversial notion that labor collectives are not ready for democracy is being paraded again. What we are essentially dealing with is a vote of no-confidence in the labor collective.

In that same meeting some enterprise executives asserted that a collective might elect a "kind" leader instead of one who is far-sighted and resourceful. But why would they do that? After all, in the new economic conditions a "kind" but incapable director or shop chief would leave the collective not only without earnings but also without social blessings. "Kind" leaders are incompatible with full cost accounting. Others suspect that out of profit motives, a director who is dependent on the collective would begin to pursue a "homemade" policy that is contrary to the interests of the state. But does the enterprise not have party, trade union and Komsomol organizations? The whole people's interests--in the conditions of real production democracy these are not but empty words--are precisely what ensure the consciousness of the

entire labor collective, of its social organizations, and chiefly of its party leadership.

Of course, when leaders are elected, errors in personnel policy could still be made. But first of all the volume of such errors would be incomparably lower in a system based on elections than with the existing procedure, in which executives succeed one another faster than frames in a movie. Second, an error can be corrected. There are no elective positions in a democratic system from which elected officials cannot be recalled before their term expires. The positions of administrative executives are no exception in this regard. Thus we cannot accept the idea that labor collectives must be divided into "healthy" ones, in which elections could be carried out right now, and collectives which might be referred to as "immature" (who, by the way, is going to hand down the appropriate verdict?), in which elections could be carried out only in the distant future.

Nor can I agree with proposals to limit the rights of the labor collective by excluding election of the supreme leader from its competency. When an enterprise or organization is self-financing and self-supporting, the end results of the work of its labor collective depend to a decisive degree on the qualifications and resourcefulness of the leader. This even pertains to the leaders of "supergiants."

There are even poorer grounds for not reelecting those directors whose activities are assessed positively. Elections are not a weapon by which we rid ourselves of executives who have compromised themselves. Sooner or later we rid ourselves of them in a system based on appointment of officials as well. Elections are a means of selecting the most capable executives and raising their responsibility before the collective. Even a competent executive may not be reelected if a better one is found. Therefore if a candidate is not elected to a position, this does not mean that he is a failure as an executive. This makes democratic practice fundamentally different from the present system.

We need to lay emphasis on this point: If we wish to develop democracy in production in deed and not just in words, and if we agree that democracy is not a slogan but the essence of reconstruction, then the principle of election of executives should be viewed as a universal principle, and it should be applied to all executives of the principal production unit without exception--from the brigade leader to the general director.

Now let's talk about procedures. Elections--the most important instrument of democracy--must themselves be democratic. The election procedure should be free of unjustified restrictions and complications. Thus if I were asked who could be nominated as a candidate for an executive position, I would answer that any worker could, if he satisfies certain formal requirements (education, qualifications, time of service) imposed on executives of the given rank. But if a candidate satisfies these requirements, he may be nominated by the ministry, by the party or trade union organization, by the council of the labor collective, by the collective of one of the enterprise's subdivisions, or even by himself. Competition is competition, and its results must depend not on who nominated the candidate but on who the candidate is. In this case

I agree completely that every nominee must explain his program of economic and social development of the collective he intends to lead. The competition between forms must be replaced by a competition between ideas about administration.

In my opinion we need to decisively reject multilevel elections (where workers elect brigade leaders, brigade leaders elect foremen and so on). We need maximum direct democracy. And this means that we must have direct elections. I support the provisions of the draft law on election of executives by a general meeting (conference) of the labor collective. And arguing between open and secret ballots as alternatives is hardly relevant here. There must be no illusions in this serious matter. We cannot rest our actions on the assumption that every laborer who votes will behave as a fearless knight who will not hold grudges. In many cases open ballots keep people from voting their conscience.

Nor is it clear why a higher level of authority must give its approval to an elected executive. Does this mean that it has the power not to confirm a labor collective's decision? On what grounds? But if such a procedure is to stay intact, then it would be absolutely necessary to establish an exhaustive list of such grounds in that law.

We are discussing the law--a fundamental legal act. It is intended to exist for more than just one day, and it must possess certain stability. Therefore it must not resolve particular issues. That is the job of supplementary acts. The election procedure (pertaining not only to administrative executives but also to the labor collective's council) must be spelled out in detail in a supplementary act such as a statute. This is where formal requirements on executives of different ranks, the competition procedure and so on can be established. Except that we should not be in a hurry to publish these documents. We have practically no experience in electing production commanders. Let's accumulate it without being afraid that elections in one collective might proceed differently than in another. After we accumulate the experience we would be able to reflect in the statute all of the best things that experience can give us.

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PARTY DECREE CALLS FOR CHANGES IN EDUCATION

Moscow PRAVDA in Russian 21 Mar 87 pp 1-3

[Decree, under heading "At the CPSU Central Committee and USSR Council of Ministers: 'Basic Directions for Restructuring the Country's Higher and Secondary Special Education'"; first two paragraphs are source introduction]

[Text] After broad discussion in the press, in collectives of higher educational institutions, scientific institutions, and enterprises and organizations, the CPSU Central Committee, taking into account the comments and recommendations that were made, has approved the "Basic Directions for Restructuring the Country's Higher and Secondary Special Education."

The CPSU Central Committee and USSR Council of Ministers adopted decrees dealing with the specific questions pertaining to their implementation. They will be published soon. Today we are publishing the "Basic Directions for Restructuring the Country's Higher and Secondary Special Education."

Basic Directions for Restructuring the Country's Higher and Secondary Special Education.

The resolution of the critical task of accelerating our country's socioeconomic development requires the fundamental improvement of the vocational and Marxist-Leninist training of specialists. The proficiency level and competency of cadres and their high civic responsibility largely determine the scope and rates of scientific-technical progress and the intensification of the national economy. The restructuring of higher and secondary special education, which has been planned by decisions of the 27th CPSU Congress, is one of the most urgent, most important tasks of developing society at the present-day stage.

I. The Higher and Secondary Special School System and the Acceleration of the Country's Socioeconomic Development

The Soviet higher and secondary special school system has a meritorious job of historic importance to society. The cadres of specialists who have been trained by that system have made it possible to resolve successfully the most complicated tasks of socialist building and the creation of the country's modern, powerful economic, scientific-technical, and defense potential. Within

short periods of time we have seen the formation of a multinational populist intellectual class, which has made a considerable contribution to the development of material production and the spiritual sphere and to raising the general educational and cultural level of the nation.

In all the union republics and economic regions an extensive network of higher and secondary special educational institutions is in operation. The higher school system is not only the source of supplying the national economy with skilled replacements, but also an important component of the country's scientific-research complex. Soviet scientists and engineer-technical workers have the priority in developing a number of new trends in science, the creation of many types of progressive technology and technological schemes, and elaborating vitally important problems of social development. The achievements of our artistic intellectual class have won world recognition. The Soviet higher school system carries out broad international cooperation and provides a large amount of assistance to many countries throughout the world in training national cadres.

At the same time, unresolved problems have recently begun accumulating in the training and use of specialists, and there has been an increase in the number of undesirable phenomena. The predominance of the extensive paths of development also manifested itself in the sphere of higher and secondary special education. The continuous and, to a certain degree, unsubstantiated increase in the number of specialists graduated was not accompanied by the proper improvement in the quality of their training. The level of instruction and education and of scientific-research activity in the higher school system does not completely conform to the tasks of accelerating the country's socioeconomic development or the rapid assimilation of the achievements of science and technology.

In the higher school system there has been an unjustified fractionalization of the specialties, and a considerable increase in their number. This has had a detrimental effect upon the general-scientific and vocational training. Departmental and narrowly regional interests have caused the proliferation of training identical types of specialties in many educational institutions. The growth of a large number of new institutions of higher learning has been delayed.

In addition to the advanced higher educational institutions--true centers of scientific training where thorough research on vital problems is organically linked with the development of highly skilled specialists--there are a rather large number of higher educational institutions that have not been providing high-quality theoretical and practical training for their graduates.

In the instructional process, the emphasis is made on expanding the volume of the material being studied, and this leads to putting too great a load on the students and harms the development of the skills that are needed for independent creative thought. The necessary attention is not paid to individual work with the future specialists, and the proper conditions have not been created for this. The number of students per instructor does not conform to the present-day

requirements for organizing the instructional process. Many educational institutions are completely separated from production, and have poor ties with academy and branch scientific institutions.

As a result the graduates of the higher educational institutions specializing in engineering, agriculture, and economics prove in a considerable number of instances to be unprepared to create or use the new-generation technology and technological schemes and have not been acquiring the proper practical skills for employing modern means of automating the technological processes, designing, and the conducting of scientific experiments, or of production control. They have poor mastery of the effective methods of locating and mobilizing production reserves and for intensifying production. The graduates of higher educational institutions in the field of medicine, because of the insufficient clinical training, frequently do not know how to make a proper diagnosis or how to provide the correct treatment. The quality of instruction in many other groups of specialties also fails to conform to today's requirements.

There has been an unjustified lowering of the role played by the secondary special school system in training the middle-level cadres that the country needs, and there has been no precise determination of the place of that school system in the changed conditions of modern production, or in the vocational training system.

A problem that has come to a head is the problem of improving the administration of higher and secondary special education. At the present time 896 institutions of higher learning are subordinate to 74 union and republic ministries and departments, including 30 which have only one or two institutions each. Secondary special educational institutions are managed by more than 200 departments. Many branch ministries and departments have not guaranteed in their subordinate institutions of higher learning and technicums the proper level of scientific-pedagogical cadres, of work in training methodology, or providing their material-technical supply. The USSR Ministry of Higher and Secondary Special Education has not been carrying out the proper supervision of the higher and secondary special educational institutions, and has been exerting insufficient influence upon the higher educational institutions of the branch ministries.

Another factor that has failed to become an effective lever in accelerating scientific-technical progress is the system for specialist refresher courses and retraining. With regard both to the scope and depth of instruction, that system fails to conform to the tasks of changing the economy over to a qualitative new technical basis. The existing network of educational subdivisions in that system does not guarantee the regular, time-responsive renovation of the specialists' knowledge, and the capabilities of the higher educational institutions and technicums are being poorly used for these purposes. USSR Ministry of Higher and Secondary Special Education has not been completely implementing the functions that have been entrusted to it for providing the methodological guidance of the system of personnel refresher courses and retraining.

The increasing gap between the specialists' level of training and the requirements of social practice has not been evaluated properly for a prolonged period of time. Past successes in the development of higher and secondary special education have shielded the buildup of serious difficulties and shortcomings, and there has been a lessening of the attention paid to its problems and needs.

As a consequence of insufficient appropriations, the material base of the higher and secondary special school system has been lagging behind seriously. That base has become obsolete and fails to conform to the tasks of training modern specialists. The extent to which the educational institutions are provided with electronic-computer and other modern technology is completely unsatisfactory. One can observe a shortage of classroom areas, libraries, and dormitories. The participation by the customer ministries in the reinforcement of the laboratory base of the higher educational institutions and the technicums and in the supplying of them with new equipment has been insignificant and has been spasmodic and nonmandatory. A number of ministries and departments that receive a large number of specialists participate practically not at all in developing the corresponding educational institutions. The material-technical base of associations, enterprises, and the academy and branch scientific-research institutes is poorly used for training the cadres.

Substantial shortcomings exist in staffing the higher educational institutions with highly qualified professors and instructors. Less than one-third of the departments are headed by professors. Many instructors in the specializing departments have not had sufficient practical experience. The quality of the student instruction and education has been seriously harmed by the limited extent to which the major specialists in the national economy and scientists participate in the instructional process with the rights pertaining to the filling of two jobs simultaneously. The existing procedure and level of payment of labor in the higher school system also fail to encourage them to participate in pedagogical work. The providing of stipends to postgraduate and undergraduate students, and to students in secondary schools, needs improvement.

The economic and social significance of the results of the work performed by the higher and secondary school system is reduced by the major shortcomings in the use of specialists. At a time when the interests of accelerating scientific-technical progress require the mobilization of the country's entire intellectual potential, there has been an intensification of people's tendency to take a wasteful attitude to its use. Every other specialist with higher education in industry is working in a job that does not require the proficiency level or specialty that have been acquired. Cadres specializing in the agricultural field, teachers, and others are also being used inefficiently. The specialist training plans do not reflect the true needs of the national economy. They are formed on the basis of unsystematized, frequently distorted tables of organizations, and unsubstantiated requisitions issued by the ministries and organizations, which do not bear any responsibility at all for any of this. An especially alarming situation is observed in the use of the engineer corps. In many instances only one-third of the work time is expended by engineers in technological-design, research, and analytical work. Engineer jobs are frequently introduced where higher technical education is not required, and the share of technician jobs in the tables of organization has obviously been understated.

The practice that has developed in using specialists is also explained by the low level of their wages. The differentiation of wages depending upon the quality and complexity of the work to be fulfilled is completely insufficient. The loss of prestige attached to the labor performed by specialists, and especially engineers, has led to a critical contradiction of the objectively increased social role of the technical intellectuals in society. These processes have led to a decrease in the attractiveness that engineer-technical education has for young people, to a lessening of the responsibility borne by the students for their training, and to the lowering of the competitions to enter higher educational institutions.

Thus, there is a crying need for a thorough restructuring of higher and secondary special education and for making it conform to the tasks of accelerating our country's socioeconomic development at the present-day stage.

A critical requirement of the time is increasing the role of higher and secondary special education as a very important factor for a long-term effect upon the economy, and upon the advancing development of socialist society as a whole. The specialist training system, and primarily the higher school system, has been called upon to become an effective tool, the carrier of the single state scientific-technical policy. On the basis of scientific forecasting of the prospects for developing the national economy, it must take steps ahead of time to form the cadre resources for accelerating scientific-technical progress.

Public education takes on increasing importance in improving social relations, in confirming the socialist way of life, and in increasing the importance of the human factor. In the course of the restructuring of the higher school system, it will be necessary to increase its role in the spiritual sphere of society, in raising the educational and cultural level of the population, in the gradual removal of the substantial differences between mental and physical labor, and in reinforcing the fraternal friendship of all our country's nations and nationalities. The democratic principles in the activities of the Soviet higher school system will receive further development. It is important to enrich the ideological-theoretical, humanitarian content of higher education, and to intensify its ties with social practice as the basis of forming the high civic and moral qualities of the individual. It will be necessary to make more complete use of the large opportunities that the educational institutions have for improving the communist education of the young people and all the workers.

The restructuring of the higher and secondary special school system must guarantee a new quality in the training of specialist cadres in close relationship with the fundamental improvement of their use, thus assuring that our country will reach the advanced goals in scientific-technical and social progress. One task posed will be to guarantee the outstripping development of higher and secondary special education with respect to the technical remodeling of the national economy.

II. Integration of Education, Production, and Science

A very important trend and basic level in the restructuring of higher and secondary special education is its closest integration with production and science, the changeover to new principles governing their interaction. It is necessary to develop the foundations of normative law and to carry out a system of measures to guarantee the considerable intensification of the mutual self-interestedness and responsibility of the higher educational institutions, enterprises, organizations, scientific and cultural institutions, kolkhozes, and sovkhozes in the substantial raising of the level of cadre instruction and education, and in improving the use of cadres. The new type of interrelationships among them must be based on contract obligations that stipulate the targeted training and retraining of cadres on a nationwide, planned basis, with the partial compensation of the expenditures for these purposes, chargeable to the branches of the national economy.

In conformity with the contracts that are to be concluded, within the confines of the state plans, the higher educational institutions have been called upon to carry out at a high level the training and refresher training of cadres in the necessary quantity and within the established deadlines, and the branches of the national economy and the enterprises have been called upon to guarantee the partial compensation of the expenditures needed to instruct the specialists and create the conditions for the efficient use of the graduates. On the basis of these long-term relations, it will be necessary to increase the participation of the enterprises and organizations in improving the quality of specialist training. Proceeding from the fact that it is precisely production, by its very essence, which is the principal material base and the natural testing ground for personnel training, it is necessary to broaden the progressive practice of carrying over part of the instructional process into production by creating instructional-scientific-production centers that include branches of the academic departments, scientific-research laboratories, and experimental sectors. It will also be necessary to make it a practice to organize branch training centers as part of the leading associations, plants, and factors, scientific and design organizations, therapeutic institutions, and enterprises in the agroindustrial complex. This must serve as a reliable prerequisite for combining the fundamental education of the cadres with the training of them for work under conditions of the specific practical situation.

The deepening of the integration of the higher school system and production creates the favorable conditions for the broad exchange of cadres among the institutions of higher learning and the enterprises, both by means of attracting cadres to permanent jobs and on terms of combining two jobs simultaneously. The developers of new technology and technological schemes must participate in the formation of specialists for their own kind of production, and the professors and instructors must participate in raising the proficiency level and enriching the theoretical knowledge of the engineer-technical workers, thus guaranteeing a reliable feedback between the instructional process and practical life. New opportunities are also being opened up for improving the work of raising the proficiency level of instructors, especially the young ones who have not had practical experience.

The closer tie that the higher educational institutions will have with the specific branches and enterprises will also make it possible to consolidate the contractual relations in the conducting of scientific research. Special attention must be devoted to intensifying the interaction that the scientists at higher educational institutions have with production specialists in carrying out pilot-experimental projects and introducing the completed developments. It will be desirable to develop the practice of organizing joint laboratories, design bureaus, and experimental production entities. In order to resolve the comprehensive interbranch problems, it will be necessary to make it a practice to create temporary scientific-production collectives by using workers from production, scientific institutions, and the higher school system, and undergraduate and postgraduate students.

The fact that the branches in material production will make partial compensation of the expenditures for the training of cadres will guarantee the attracting of additional funds to modernize the instructional-scientific process in the higher educational institutions. It must become the rule to accompany the expenditure of training or the opening up of new specialties at educational institutions by lump-sum capital investments by the interested branches. In the necessary instances, contract principles can be extended also to the interrelations that the universities and institutes have with the scientific institutions.

An important trend in improving the interaction that the higher and secondary special school system has with production is the changeover to the new mechanism for ascertaining a real need for cadres and, on that basis, the overcoming of the formal methods of determining the volumes of specialist training. A study of the need for cadres and the formation of their organizational and proficiency structure must rest upon the combined actions of the enterprises and educational institutions in certifying the specialists' job stations and in defining precisely the functions and content of the labor to be performed by the workers, thus promoting the elimination of a situation that frequently concealed--a surplus in specialist training. On that basis it will be necessary to develop new structures for tables of organization in the branches of the national economy, to guarantee the efficient correlation between specialists with higher and secondary special education, and to eliminate decisively the excessive number of engineer jobs in all links of the administrative apparatus. The quotas for engineer support of production must be defined on a strictly scientific basis with a consideration of the achievements of domestic and foreign practice. At the same time the contract relations must promote the expansion of the training of specialists with higher education in the area of administration and the organization of production, sociology, and psychology.

The improvement of the cadre structure must be closely coordinated with the measures being carried out to improve the psychological and material incentives provided to engineer-technical workers and with their real contribution to the acceleration of scientific-technical progress.

In addition, it will be necessary to work out the legal and administrative measures to increase the responsibility borne by the ministries and departments, and the enterprises and organizations, for substantiating their requisitions for cadre training and for hiring graduates of educational institutions in violation of the state assignment plan, as well as for resolving the questions of assigning young specialists in production and creating their proper working and living conditions. In turn, it is necessary to increase the responsibility borne by the higher educational institutions for the quality of instruction given to the future specialists, and for the unconditional fulfillment of the planned assignments and contractual pledges with regard to the prompt training of cadres in the appropriate areas of specialization. The educational institutions and social organizations must be constantly concerned about educating in the future specialists a sense of civic duty and professional pride, and increasing their responsibility for work at their place of assignment.

One task that is posed is that of assuring that the higher school system unconditionally guarantees the high level of knowledge demonstrated by its students in all their practical work.

The intensification of the integration of the higher school system and production must increase the role of the consumer in evaluating the level of cadre training. Taking into consideration the fact that the quality of their instruction manifests itself directly in their practical work, it is desirable to establish the following procedure for certifying the young specialists: upon graduation from the higher educational institution, the specialist is to be given a diploma attesting to his receipt of a higher education, and then, on the basis of the results of three years' work at his place of assignment, a specialist's certificate of proficiency, in which the rise in his proficiency level must find expression throughout his labor activity. It is also necessary to organize more efficiently the existing system of periodic specialist certification, which should be carried out approximately once every three to five years. In order to intensify the encouragement of the quality and proficiency of labor, it will be necessary to establish several categories of specialist jobs with a corresponding salary, which jobs are linked with the nature and quality of the work to be fulfilled. The certificate of proficiency must serve as the basis for the specialist's occupying the corresponding job.

III. Improving the Quality of Specialist Training Is the Chief Task of the Higher School System

The first-priority task is to effect a decisive turning away from mass, gross instruction to the intensification of the individual approach, and to the development of the creative abilities of the future specialists, relying upon their independent work, and active forms and methods of instruction: seminars and practical classes, discussions, and the modeling of production and practical situations. One of the basic methods of developing analytical and creative thought must be the mandatory participation of the students in

scientific research and in real construction-planning and technological-design projects. A reliable means of assuring the complete intensification of the instructional process and the improvement of its quality will be the providing of it with computer technology.

For the successful implementation of the assigned task, it will be necessary to decrease the work load placed on the students with regard to mandatory auditorium classes, and to improve the organization of independent work, by providing methodological aid and monitoring on the part of the instructors. For purposes of improving the conditions for individual work, it will be necessary to reduce the number of students per instructor, including the reduction achieved by abbreviating the student contingent in certain specialties. When carrying out practical, seminar, and laboratory classes, the instructional group will be divided into two subgroups. Instruction will be developed in accordance with the individual instructional plans. The number of elective courses and disciplines will be increased.

An atmosphere of a strenuous struggle for knowledge will be created in the student collectives and this will promote the most complete revelation of the young people's abilities and talents. It will be necessary to put at the head of all this work of increasing the intensity of educational activity the improvement of the system of selecting the future specialists throughout their period of instruction, as well as the taking of all steps to develop the competitiveness among the students in assimilating their knowledge. More complete use for these purposes will be made of stipends in differentiated amounts, priority assignments, and other forms of psychological and material incentives. Graduates who have received diplomas with distinction are to be given initial wages in increased amounts. The responsibility borne by students in higher and secondary schools for the results of their educational labor is to be increased, and an exacting and objective evaluation of their knowledge will be guaranteed. The dependence of the number of instructors upon the student dropout rate will be eliminated. The professor and instructor staff in the day departments will be determined on the basis of the admittance plans, the number of instructional groups that are formed, and the peculiarities of the organization of the instructional processes in higher educational institutions in various areas of specialization, without a consideration of the dropout rate.

It will be necessary to systematize the structure of cadre training in the higher school system and to overcome the narrowly departmental, discipline approach to constructing the list of specialties, considerably reducing their overall number. It will be necessary to change over to the development of specialists with a broad area of specialization, who combine excellent fundamental knowledge and thorough practical training that has been oriented toward a specific branch. The completion of the instruction of the future specialists with the participation of production, and the well-developed system of raising the level of proficiency, must guarantee the specific specialization and rapid adaptation of the cadres to the newer conditions of their practical work.

In conformity with the basic directions for restructuring the higher educational system, it will be necessary to change over to new instructional plans and curricula, and to systematize their regular updating with a consideration of the latest achievement of science, technology and culture, and the present-day requirements of practice. The instructional plans will have a reserve of as much as 15 percent of the instructional time.

Life persistently requires the introduction of the differentiated training of specialists, as applicable to the basic types of their future professional work.

For scientific institutions, design and construction-planning organizations, production entities involving a large number of scientists, and the scientific subdivisions of enterprises and organizations, in particular, it will be necessary to guarantee the most intensive training of the cadres by transferring the students who have demonstrated an aptitude in scientific-technical creativity to individual instructional plans, including those with a prolonged period of instruction or in the form of scientific probationary work. It will also be necessary to expand for these purposes the internal postgraduate system and the institute of probationary researchers. The training of these specialists is to be carried out on the basis of special requisitions from the enterprises and organizations.

When changing over to the training of specialists with a broad area of specialization, it will be necessary to resolve in a new way the questions of organizing their production practice. It will be necessary to increase its role in the students' mastery of the practical skills needed for their professional development, and the principles of organizational and educational work in the labor collectives. There will be an intensification of the responsibility borne by the managers of ministries, enterprises, and institutions for the specialists' professional and practical training. This work will be viewed as a very important duty in developing cadres for their branch. The leading workers in production will be broadly involved in the practical instruction of the students. Conditions will be created to assure that each student learns his working profession and undergoes a period of probationary assignment as a technician, engineer, or in other appropriate jobs. In necessary instances, for a number of specialties, there will be an increase in the amount of time spent in production practice, primarily during the final stage of instruction. More active use for these purposes will be made of the branch training centers.

It will be necessary to carry out the cardinal improvement of the system of training specialists while they continue working on the job—the main channel by which young workers can receive higher education—including training with reduced periods of instruction, for graduates of secondary special educational institutions. Steps will be taken to guarantee the considerable improvement in the quality of specialist training in evening and correspondence departments, and to approve the list of specialties in which this training can be carried out effectively. When determining the instructional forms and periods, there will be an intensification of the individual approach to making up various groups of students depending upon the level of their theoretical and practical training.

Broader use will be made of the system of training specialists without taking them off the job, as an effective form of raising proficiency level of the workers and providing for the well-rounded education of the individual. All the citizens will be granted the opportunity to obtain additional knowledge in individual disciplines or series of appropriate disciplines.

For purposes of improving the quality of cadre training it is necessary to attach special importance, when selecting people to get instruction at higher educational institutions, to selecting the best-trained young men and women who have shown an aptitude for the chosen specialty. There will be a transition to long-term forms of vocational guidance and broader use will be made of methods of psychological and pedagogical science which guarantee the identification and development of the young people's aptitudes and capabilities. The acceptance rules will be constantly improved and there will be an increase in the objectivity of competitive selection for admission to institutions of higher learning while observing the principles of social justice.

It will become a broader practice to send young workers to training at institutions of higher learning while paying them larger stipends that are charged to the enterprises, organizations, and kolkhozes. The persons admitted to the preparatory departments of higher educational institutions will be the advanced workers in all branches of the national economy and kolkhoz members with work longevity of no less than 2 years, as well as military personnel in the reserve.

IV. Raising Specialist Training at Educational Institutions With Various Areas of Specialization to the Level of Present-day Requirements

The higher and secondary special school system has been called upon to develop cadres that combine thorough professional training and ideological-political maturity, who have been educated in the spirit of Soviet patriotism and proletarian internationalism. Today's specialist must possess thorough Marxist-Leninist training, a modern way of economic thinking, the practical skills required for administrative, organizational, and educational work, energetic methods of using electronic-computer technology as applicable to his area of specialization, high overall culture, and the knowledge of a foreign language. He must be distinguished by initiative and responsibility, the need for constant renewing and enrichment of his knowledge, and the ability to make bold innovative decisions and to work energetically to implement them.

Proceeding from the planned directions in the restructuring, it will be necessary to refine the requirements for developing educational institutions in various areas of specialization, and the basic orientation markers in their activity under present-day conditions.

Raising the higher and secondary school system to a qualitatively new level is one of the factors necessitating the taking of all steps to improve the work of the universities. Their graduates have been called upon to become the carriers of advanced scientific thinking in all links of public education at the new stage of its development. The scientific-pedagogical university collectives must show special concern for training highly qualified teachers for the general-educational and vocational school system. It is necessary to

increase substantially the role of the universities in training theoretical cadres in the field of Marxism-Leninism and the natural sciences for academy and branch science, the higher school system, ideological institutions, and modern production.

The instructional process in the universities must guarantee the combination of high theoretical and applied training, a differentiated approach in instructing the graduates for pedagogical, research, and production work. The training of specialists is to be developed in the new areas where sciences come into contact with one another.

For purposes of developing cadres who possess fundamental knowledge in the natural sciences, it is desirable at the leading universities to have special sections and departments for the training and retraining of specialists for the science-intensive industrial and agricultural production and public health.

While accumulating the latest trends in scientific knowledge, the universities are obliged to a greater and greater degree to reinforce the country's scientific-technical potential, to exert an influence upon the acceleration of the socioeconomic development of the corresponding regions, and to become genuine centers of science, culture, and communist education.

The acceleration of scientific-technical progress dictates the special need for the decisive restructuring of engineer-technical education. It will be necessary to educate cadres who are capable of guaranteeing revolutionary reforms in technology, technological schemes, and the organization of production, and the considerable increase in labor productivity. In instructing specialists with a broad area of specialization, it will be necessary to reconsider the deepening of the theoretical base, the mastery of the fundamentals of engineering and administrative activity, and the substantial improvement of practical training with the participation of production.

The process of developing engineer cadres must be subordinated to the developing in them of the practical skills required by their independent technical creativity, their systematic analysis of technical-economic problems, and their ability to find effective decisions. It is precisely the aptitudes and the demonstrated capabilities in technical creativity that must become one of the most important criteria for selecting young people for the engineering specialties.

The implementation of the USSR Food Program is inseparably linked with the improvement of higher agricultural education. It will be necessary to provide thorough training for the future specialists, to assure their assimilation of modern intensive technological schemes in vegetable and animal husbandry with a consideration of the industrialization of agricultural labor and the agro-industrial integration of production and the changeover of the kolkhozes and sovkhozes to genuine and complete cost accounting. Special attention must be devoted to extending the cadre instruction in new areas of science and technology, such as genetic engineering, biotechnology, etc., as well as in administrative work. It will be necessary to intensify the ecological education of the future specialists and their orientation on the efficient and comprehensive use of the natural environment.

Every experimental farm must be converted into an exemplary scientific-training enterprise where the practical instruction of the students must be carried out under conditions of the direct implementation of intensive technological schemes and the advanced organization of production. The graduates of agricultural educational institutions have been called upon to bring high culture into the entire life of the modern countryside.

Taking into consideration the special urgency of the problem of assigning cadres permanently in rural areas, it will be necessary to improve the selection for agricultural specialties primarily of young people having an aptitude for agricultural labor and to develop in the future specialists a love for the land and a sense of high civic duty.

The needs of intensifying production and improving the management methods advance the task of substantially improving the training of economic cadres. The higher school system has been called upon to graduate specialists who possess a knowledge of the economic laws of socialism and the mechanism of using them, and who are capable on that basis of determining the specific paths for increasing the effectiveness of production and improving the quality of output, and of working out steps to improve the administration of the enterprises, production associations, and branches of the national economy.

In the training of economists, it is necessary to assure the combination of a high level of political-economic education with a thorough knowledge of the theory and practice of administration of the socialist economy and of the specific trends for improving the economic mechanism in the branches of the national economy, as well as a broad horizon in the area of technology and technological schemes. The economic cadres must know how to use the methods of mathematical modeling and modern electronic-computer technology in resolving economic and administrative tasks.

The need to reinforce the legal foundations of state and public life, and to assure the constant observance of socialist legality and law and order, and the need to wage a decisive struggle against crime and all undesirable phenomena, require the improvement of legal education, and the further reinforcement of its ties with practical life. In addition to improving the overall legal training, the graduates of the legal educational institutions must be trained for successful work involving the specific channeling of their law-enforcement efforts, Soviet building, and legal service in the national economy. Their thorough and well-rounded professional knowledge must be combined with their civic bravery, adherence to principles, complete resistance to bribes, and their high sense of social justice.

The vitally important tasks of the radical improvement of the quality of Soviet public health persistently demand the improvement of medical education and the considerable intensification of the theoretical and practical training of specialists. It will be necessary to guarantee a closer link in the instruction of the medical-biological sciences and the clinical disciplines. The graduates must possess modern methods of diagnostics and treatment of the human organism

as a single whole. Special attention must be devoted to the final stage in the development of the physician and the pharmacist directly at therapeutic and pharmacy institutions, and the increase in the effectiveness of the resident and intern system.

One of the chief tasks is educating in medical workers high moral and civic qualities and a spirit of charity. The staffing of medical institutions of higher learning is carried out by drawing on persons who have worked as junior or medium-level medical personnel no less than 2 years, as well as military personnel in the reserve who have shown a vocation for the medical profession.

The restructuring of higher pedagogical education which was begun in conformity with the school reform was aimed at the complete improvement of the teacher cadres which have been called upon to raise to a new level the education and indoctrination of the upcoming generation, and its readiness for an independent life of labor. It is important to intensify the link that the universities and pedagogical institutes have with the secondary educational and preschool institutions. The future teachers must be armed with advanced pedagogical experience and they must be educated to be completely intolerant toward formalism and the stagnation of the forms of instructing and educating the children.

It will be necessary to supply completely the growing needs of the general-educational schools, the vocational-technical schools, and the preschool and nonschool institutions for teachers and educators. Steps will be taken to ensure that all the links in the educational system are staffed only by teachers and educators who have higher education.

Features that must be very important ones in the professional makeup of the teachers are ideological and moral purity, kindly exactingness, a spiritually outgoing nature, and a love of children. The persons accepted in pedagogical specialists must be selected exclusively on the recommendations of the pedagogical councils at schools, labor collectives, and rayon (city) Komsomol committees, from among the persons have an aptitude and experience in working with children, and also military personnel in the reserve.

The improvement of the work performed by the higher educational institutions in culture and art must be subordinated to improving the increasing spiritual and esthetic needs of the Soviet citizen. In addition to professional skills, the graduates of those higher educational institutions must be distinguished by a thorough understanding of the high purpose of artistic creativity and its constructive role in educating the new person, and also must be distinguished by the ability, from class and party positions, to reflect in art and vitally important problems of modern life and to confirm communist ideals. It is important to improve the selection of instructors from among literary and artistic figures who have been called upon to give artistic instruction while simultaneously instilling high ideological-political and moral qualities in the creative young people.

It will be necessary to raise the level of training of specialists for cultural-educational institutions, and to provide them with cadres of organizers of folk creativity and cultural recreation for the population.

It is necessary to intensify substantially the role of the secondary special educational institutions in the vocational educational system. It will be necessary to achieve the complete satisfying of the needs of the national economy for skilled middle-level cadres. It will be necessary to train technicians for industry, transportation, communication, and agriculture as competent managers of primary labor collectives, who are capable of resolving specific tasks of technical progress in the primary links of production and to assure high technological efficiency and the assimilation of new equipment. The cadres with secondary special education will largely determine the rise in the quality of the work of such important spheres as trade, the housing management, and personal services.

In the interests of improving the practical training of the technicum graduates and overcoming the gap between theoretical instruction and social practice, it will be necessary to develop the time-tested forms of tying in the instructional process with production, such as the technicum-enterprise, the sovkhoz-technicum, and the therapeutic institution as school. For the same purposes it will be necessary within the very near future to create at secondary special educational institutions well-equipped production-training shops that operate on the basis of cost accounting, or production-training sectors at the base enterprises or the institutions and organizations themselves.

On the basis of the real need for cadres, there will be differentiated training of specialists with a consideration of the educational level of the young men and women, and the nature and complexity of production. It will be necessary to extend the training of cadres with secondary special education for adjusting and operating modern technology and especially complicated technological equipment. It would seem to be desirable to create at technicums sections for the training of brigade leaders and foremen from among the advanced workers, with an abbreviated period of instruction and with the appropriate material support. The practice of the accelerated training of cadres at higher educational institutions from among the graduates of secondary special educational institutions will be expanded.

V. Educating Ideologically Mature, Socially Active Specialists

In resolving the tasks of accelerating economic and social progress, there has been an immeasurable increase in the importance of educating a harmoniously developed, socially active specialist and intensifying the ideological-educational functions of the higher and secondary special school system.

The professor and instructor collectives and the party, Komsomol, and trade-union organizations at educational institutions have been called upon to intensify the work of providing the ideological-political, labor, and moral education of the young students in the higher and secondary schools, and assisting in the civic growth of the future specialists. It is necessary to

overcome the gap that has been noted between the educational work and the real problems of cadre training and the tasks of social development. It is necessary to increase the participation of the managerial party, soviet, and economic workers in ideological work with the students.

It will be necessary to raise substantially the ideological-theoretical and methodological level of instruction of Marxism-Leninism as the unshakable basis for developing the scientific political philosophy of the Soviet specialist. It will be necessary to strive persistently to achieve a situation in which the process of instilling in the students knowledge in the field of Marxist-Leninist theory is organically accompanied by the developing in them of the ability to make an independent analysis of the complicated phenomena of social development and to make active use in their professional life of the knowledge that they have received. In order to improve the instruction of revolutionary theory as an integrated theory in the organic unity of its component parts, it must be deemed necessary to work out single curricula on the social sciences for various types of higher educational institutions, to publish new textbooks, and to establish a state examination on Marxism-Leninism.

It is important to eliminate the dogmatism and scholastic theorizing that are still encountered in the instruction of the social sciences and to react sensitively to the changes that are occurring in life. It is necessary to improve the quality of the lectures and to assure that they throw light upon the key theoretical questions and practical tasks of social development and the domestic and foreign policy of the CPSU. It will be necessary to increase the time devoted to seminars and individual work with the students and to assure that they are imbued with the need for, and the practical skills required for, the regular and thorough study of the works of K. Marx, F. Engels, V.I. Lenin, and the CPSU documents.

A major reserve for increasing the success rate in the instruction of the social sciences is the consideration of the area of specialization of the higher educational institution, and the nature of the future production activity of its graduates. Social scientists, jointly with the instructors in other departments, have been called upon to increase the political directedness of the entire instructional process, to develop in the future specialists the practical skills needed for the creative application of the dialectical-materialistic method in professional and social work, and to educate the students to be politically vigilant and intolerant of hostile ideology. The students are to be granted a broader opportunity to study the questions of the theory and history of domestic and worldwide culture.

Purposeful work is to be carried out in providing the military-patriotic education of the young students and to develop in them the constant readiness to defend their socialist Motherland and to execute their patriotic and international duty.

It is necessary to intensify substantially the scientific work performed by the instructors in the departments of the social-economic disciplines in studying the pertinent problems of social development. Their efforts are to be concentrated on the thorough elaboration of the most important questions advanced in the Political Report of the CPSU Central Committee to the 27th Party Congress and in the new edition of the CPSU Program, while also attempting to achieve, as final results of their research, scientifically substantiated practical recommendations and reliable socioeconomic forecasts for the regional and nationwide agencies.

There will be an intensification of the role played by the party committee in the selection, assignment, and education of instructors in the social sciences. When organizing the raising of their proficiency level, care will be taken that the supplementing of the social scientists' theoretical knowledge is accompanied by a study of practical experience on the basis of probationary work in party, state, and economic agencies, and also by their broad familiarization with the work of the labor collectives and the primary party organizations.

It will be necessary to make more effective use of the entire arsenal of forms and methods of educational work and to overcome people's attraction by the quantitative aspect of the job at hand, to the detriment of his content. The individual approach to developing the personality of the future specialist will be made the center of educational work. The attempt will be made simultaneously to have the student group exert an effective educational effect upon the training, convictions, behavior, and moral outlook of every member of the collective and to assure their strict observance of the standards of communist morality and their active opposition to anything that is hostile to the Soviet way of life.

Decisive steps will be taken to eliminate formalism and excessive emphasis on organization in the social work of the students in higher and secondary educational institutions. While giving its due to the great importance of the student detachment movement, it is necessary to take steps to increase the educational effect of those detachments, and to exclude narrow-minded manifestations and other negative phenomena from their life. It will become a broader practice to create specialized detachments conforming to the area of specialization of the educational institutions.

In organizing the students' scientific research, the attempt will be made to assure that the young people, by participating in the resolution of the vitally important tasks alongside of the leading scientists, assimilate civic ethics and a creative and selfless attitude to their chosen profession. There will be improvements in the conducting of competitions involving student scientific projects.

There will be an increase in the social-political practice of the future specialists, and the attempt will be made to assure that that practice is converted into an increasingly effective factor for developing the practical skills needed by organizers and educators of the labor collectives. Provision will be made for the students' broader participation in propagandizing the party's policy among the workers and in ideological-educational and mass sports work with young children and teenagers.

It is necessary to take all steps to develop student self-government and the initiative and independence of student collectives and the Komsomol and trade-union organizations at higher educational institutions in resolving all questions in student life. Questions that will be transferred completely to the competency of the student collectives include the questions of organizing the students' socially beneficial labor, everyday living, and recreational conditions, and the maintenance of law and order in the dormitories and dining halls, instructional areas, and libraries.

The rights of the Komsomol at the higher educational institutions will be used more completely at the All-Union Council on Higher Education and at the councils of the higher educational institutions and departments in order to pose fundamental questions of instruction and education on the basis of studying the students' opinions and recommendations for improving the organization of the instructional process and for improving the quality of instruction. Questions of the creative mastery of the profession and the improvement of education in the instructional process must be in the center of attention of the Komsomol organizations at the educational institutions and the student self-government agencies.

An object of constant concern for the student collectives is the organizing of the efficient use of the young students' free time for purposes of the complete development of their individuality, the assertion in the student environment of a healthy, cultured, sober way of life. It will be necessary to take cardinal measures to develop mass work involving physical culture and defensive sports as an effective means for developing physically healthy, creatively active generations of specialists. Broad use for these purposes will be made of the cultural and sports base at enterprises and departments.

VI. The Complete Development of Science at Higher Educational Institutions Is the Basis of Improving Specialist Training and an Important Reserve for Accelerating Scientific-Technical Progress

It will be necessary to increase the contributions made by science at higher educational institutions to resolving the tasks of our country's socioeconomic development. More active use will be made of the advantages of the higher school system, primarily the concentration at educational institutions of scientific specializing in various areas of science, in developing the comprehensive national-economic and interbranch scientific-technical problems. Steps will be taken to intensify the ties among scientific efforts at the institutions of higher learning, the academies of sciences, and the branches, to assure the students' broad involvement in research, and on that basis to improve the quality of specialist training.

It will be necessary to expand considerably the scope of scientific research and development because carried out by the higher educational institutions and to achieve a sharp increase in their benefit to the national economy. This

will require doubling or tripling the volume of fundamental research and the approximately tripling or quadrupling of technological-design and pilot-experimental projects. It will be necessary to reconsider the structure that has developed in the distribution of labor, financial, and material resources, and to channel them primarily into the final stage of the "research to development to introduction" cycle. In extending the fundamental and exploratory research, there will be an intensified coordination of the activities of the leading universities and institutes with the academic scientific institutions. There will be an increase in the appropriations for developing fundamental research, as charged to the state budget and some of the funds received by the higher educational institutions from the performance of projects carried out in accordance with economic contracts. The carrying out of state-budget research at the departments, and the providing of them with material resources and auxiliary personnel, are to be systematized.

The final engineer work on the research results and the acceleration of their introduction into practice will require the accelerated development in the higher school system of a technological-design and pilot-experimental base, and primarily of organizations and enterprises combining several higher educational institutions. On that basis it will be desirable to extend the manufacture of experimental models and small production series of new articles and to establish production entities involving small tonnages of materials. Specialized subdivisions will be formed to develop programmed means for automating scientific experiments, for construction planning, and for controlling technological processes and production.

The ministries and departments will have to intensify their aid to the higher educational institutions in developing the pilot-experimental base, and must transfer to them a number of enterprises and include their own production capacities in the manufacture of new models of new technology and in the development of progressive technological schemes.

It is necessary to improve the organization and increase the effectiveness of scientific-research and experimental-design projects being carried out by the higher educational institutions on the basis of economic contracts with enterprises and institutions. Projects involving economic contracts are to be developed to resolve large-scale socioeconomic and scientific-technical problems on the basis of long-term comprehensive contracts between the agencies responsible for administering the higher educational institutions and the branch ministries, as well as educational institutions and production associations and enterprises.

In order to accelerate the introduction of the developments that have been completed at the higher educational institutions, it will be made a practice to have cadre support for them, by means of the purposeful training of specialists, as well as the retraining of enterprise workers.

For purposes of expanding the exploratory and fundamental research front, and developing and renewing the experimental-production base of the higher educational institutions, the economic contracts for the fulfillment of scientific-research projects will stipulate planned accumulations in the amount of 20 percent of their estimated cost.

It is necessary to improve cardinally the material-technical support of the scientific-research and pilot-experimental projects in the higher school system, and to extend to the organizing of their supply the procedure that was established for the "Science and Scientific Service" branch.

It is necessary to create in the scientific collectives at higher educational institutions an atmosphere of high civic responsibility and exactingness for accelerating scientific-technical progress.

VII. Improving the Qualitative Makeup of the Scientific-Pedagogical and Scientific Cadres Is a Decisive Factor for Raising Higher Education and Scientific Research

The quality of the instructional-educational process is determined primarily by the professor and instructor staff. The entire rate of social development puts the scientific-pedagogical cadres at the higher educational institutions on the leading edge of the struggle for the acceleration of scientific-technical progress. It will be necessary to improve substantially the formation of the professor and instructor staff, to create favorable conditions for revealing the creative capabilities and skills of the young scientific-pedagogical workers, and to take steps to reinforce the leadership of the educational institutions, their branches, schools, and departments. Constructive work with the cadres in the higher school system is an absolutely mandatory condition for restructuring it.

There will be an expansion in the training of scientific-pedagogical and scientific cadres through postgraduate programs, chiefly full-time. It will be deemed desirable to increase the scope of those programs with a consideration of the growing needs of science-intensive production. Improvements will be made in the selection of capable young men and women for the postgraduate programs, primarily by drawing on specialists having, as a rule, work experience in the chosen scientific area. The role of postgraduate programs in the scientific-theoretical, political, and psychological-pedagogical training of the scientific cadres will be increased. Persons who have successfully completed instruction in a postgraduate program will be given the appropriate title of research specialist. The subject matter of the dissertation research will be concentrated in the high-priority areas of science and technology. The practice of training young specialists for independent scientific-pedagogical work in assignments of probationary teachers and probationary researchers will be better organized and expanded. There will be a re-examination of the procedure for selecting and accepting persons into target-area postgraduate programs. The stipend paid to postgraduate students will be increased and more concern will be shown for their housing and everyday living conditions.

It will be deemed desirable to create a doctoral program at the leading higher educational institutions and academy and branch scientific institutions. The persons channeled into it will be candidates of sciences who have had creative achievements and a sufficient scientific backlog in the selected topic.

It will be necessary to achieve a considerable improvement in the organization and effectiveness of the steps to raise the proficiency level of instructors on the basis of a combination of theoretical and practical retraining. Provision will be made for prolonged (as long as one year) probationary work by instructors in branches of the national economy in specialist jobs and for their immediate participation in the resolution of production tasks.

Increased attention will be devoted to the political education of instructors and to their study of the vitally important problems of Marxist-Leninist theory and the policy of the CPSU and to increasing the work of the methodological seminars.

The existing procedure for awarding learned degrees and academic titles will be improved. The resolution of questions concerning the awarding of the titles of professor and assistant professor to workers at higher educational institutions is to be transferred to USSR Ministry of Higher and Secondary Special Education.

A system of competitive re-election of administrative and scientific-pedagogical workers at higher educational institutions will be introduced and there will be an intensification of the requirements on their pedagogical and scientific proficiency, ideological-moral outlook, and their real contribution to the training and education of specialists. Administrators of higher educational institutions will be granted the right in necessary instances to establish a year's trial period before electing a person to an instructor job on the basis of a competition. The atmosphere which will be established in the scientific-pedagogical collectives of the higher educational institutions will be one of initiative and creativity, high discipline, reciprocal exactingness, and adherence to principles, and one that fights against any manifestations of stagnation, routine, protectionism, or other undesirable situations.

In the course of the next few years it will be necessary to guarantee the staffing of new higher educational institutions in Siberia, the North, and the Far East with highly qualified instructor cadres. The leading professor and instructor collectives have been called upon to render all kinds of assistance to those higher educational institutions, including by means of detached duty assignments by experienced scientific-pedagogical workers for direct participation in improving the instructional-educational process and the organizing of scientific research.

The list of jobs for the professor and instructor staff will be put into conformity with the present-day requirements of the instructional process. The salaries of workers in high educational institutions will be increased and the providing of material incentives for work as an instructor will be intensified. Steps will be taken to increase the pension security of professors and assistant professors at higher educational institutions. Constant

concern will be shown for improving the working and everyday living conditions of the professor and instructor cadres and the providing of them with medical services and the use of sanatoriums and health resorts. It will be desirable to introduce the honorary title "Honored Worker in the Union Republic's Higher School System."

VIII. Intensifying the Role of the Higher School System in Raising the Specialists' Proficiency Level and in Retraining Them

Under conditions of the present-day scientific-technical revolution and the rapid aging and renovation of scientific knowledge, technology, and technological schemes, a task that objectively emerges as a first-priority one is the universal instruction of specialists after their graduation from a higher educational institution. It is necessary to create on a new basis a single state system for the retraining and professional growth of cadres. It is necessary to change over from the procedure that has developed in the country by which there is a periodical (but in practice episodic) raising of their proficiency level, to a system of continuous, time-responsive supplementing and renewing of their knowledge. It must become an immutable rule that every worker devotes a definite amount of time during the day, week, month, and year to raising his proficiency level and to mastering the modern achievements of science, technology, culture, and advanced experience.

For these purposes it will be necessary to create at the associations, institutions, enterprises, and all the organizations various permanent forms of continuous instruction for the specialists, viewing this as a very important condition for guaranteeing the effective activity of any labor collective. In addition, it will be necessary to achieve a situation in which every specialist no less than once every five years fundamentally renews his professional knowledge at special educational institutions, chiefly by taking full-time instruction for a period of up to 3 months. In addition, it is necessary to assure the retraining of specialists and administrative cadres in proportion to the production necessity.

It will be necessary, in conformity with present-day requirements, to develop in the necessary scope and to systematize the state network of instructional institutions, including the branch, interbranch, and regional ones, which network must satisfy the various demands of instructing the contingent of cadres--from the needs of self-education and consultative sessions dealing with specific questions, to the receiving of a new specialty. In branches of the national economy it is vitally necessary to have instructional centers, schools, and institutes for refresher training. There will be a reduction in the standard number of students per teacher in the system of retraining and refresher courses. In order to coordinate and organize the entire varied job of renewing the workers' knowledge, in every branch it will be desirable to create a lead institute for refresher training. It will be necessary to assure the coordination of their activities with the work of the scientific-technical information services.

A task of national importance is the increase in the role played by the higher school system, the more complete use of its scientific-pedagogical cadres in special retraining. In cooperation with the ministries and departments, it will be desirable to organize at higher educational institutions interbranch and branch instructional centers, institutes, and schools for specialist refresher training and retraining, chiefly in new areas of science and technology. It will become a practice to create at higher educational institutions courses which operate on a cost-accounting basis for citizen who wish to acquire knowledge in accordance with a definite program, the knowledge and practical skills required for mastering computer sciences, to study foreign languages, etc. For purposes of systematizing the work with cadres who raising their proficiency level independently, special subdivisions will be organized at higher educational institutions in order to hold consultative sessions and monitor the level of their knowledge.

It is necessary to intensify the methodological-organizational guidance and carrying out of state inspections by USSR Ministry of Higher and Secondary Special Education for the entire system of continuous refresher training--with regard to the instruction content, the development of educational institutions of that type, and the coordination of their actions irrespective of the department to which they belong.

It is important to increase the personal responsibility and self-interestedness of the cadres, assuring that the certification, on-the-job growth of the specialists, and the establishment of their wage level are directly dependent upon the results of their efforts to raise their proficiency level. All types and forms of raising the proficiency level must be reflected in the specialist's certificate of proficiency.

In addition, it is necessary to increase considerably the responsibility borne by the administrators of ministries and departments, enterprises, organizations, and institutions for the level and timeliness of training cadres for the resolution of new tasks both in the production and nonproduction spheres, and the creation of the necessary conditions for the effective operation of all links in the refresher training system. The work of that system is to be subordinated to the tasks of the successful fulfillment of the plans for the economic and social development of the country, the branches of the national economy, associations and enterprises, and kolkhozes and sovkhoses.

The steady and rapid mastery of the achievements of science and technology, and of advanced experience, must become the standard and vital necessity for every specialist. The government assumes the obligation of providing all citizens with favorable conditions for the constant supplementing of their knowledge. The reform of the general-educational and vocational school system, the restructuring of secondary and higher education, and the organization of a smoothly operating state system for the refresher training and retraining of cadres serve as a reliable prerequisite for implementing the goals of the 27th CPSU Congress concerning the creation of a single system for continuous education.

IX. The Technical Re-equipping of the Higher and Secondary Special School System Is a Completely Mandatory Condition

The complication of the tasks of the instructional-educational process and the development of scientific research require the cardinal resolution of a series of questions pertaining to the reinforcement of the material-technical base of the higher and secondary special school system. It is necessary to guarantee the purposeful allocation of the necessary resources for this sphere, including those charged to the considerable increase in the funds from the appropriate branch ministries and departments. For purposes of improving the quality of specialist training, it is planned that the development of the instructional-laboratory base at higher and secondary special educational institutions will outstrip the development of production, and this will be done by providing those institutions with the latest instruments, computer technology, and equipment, including the allocation for them of the first models of new technology being manufactured in series production. The constant effort will be made to assure the efficient and complete use of the funds channeled into the development of the higher and secondary special educational institutions. In addition it will be necessary to follow consistently the line aimed at the increasingly active use of the modern base at associations, advanced enterprises, and scientific institutions for the purpose of instructing the students at higher and secondary educational institutions.

The instructional-laboratory areas at the higher educational institutions and technicums will be increased to the established standards, and spaces will be provided in dormitories for the undergraduate and postgraduate students who need them. This will require the building of instructional-laboratory buildings with a total area of approximately 18 million square meters, as well as undergraduate and postgraduate dormitories with accommodations for 630,000 persons. It will be necessary to create the proper conditions for every student to engage in independent instructional work, to expand his cultural horizon, and to engage in physical culture and sports. Apartment buildings will be built for the professor and instructor staff. Medical and personal services for the students and instructors at higher educational institutions will be organized on a modern level.

The planning of scientific-training centers and student housing areas at higher educational institutions will be made in the plans for the construction of specialized social, personal-services, cultural, and sports structures. It will be necessary to assure that the decisions pertaining to architectural planning conform to the high esthetic requirements of city planning.

The ministry and department plans will provide for the allocation, charged to the funds being transferred to the higher school system by branches of the national economy, of financial limits for exploratory-planning and construction-and-installation operations to erect buildings at higher educational institutions.

It will be necessary to develop scientifically substantiated standards for providing the educational institutions with laboratory equipment, graphic aids, and technical means of instruction, and their engineer-technical maintenance. Provision will be made for developing the production of standard unified instructional-laboratory equipment as an independent subbranch of the national economy. It will be necessary to reinforce the design and production base for creating instructional-laboratory technology and to use the capacities of the branch ministries for the series production of that technology. There will be an increase in the shipment of printing equipment and reproduction technology for the higher school system. Special attention will be devoted to developing the material base of the libraries at the higher educational institutions, and to be renewing of their collections.

In the 12th 5-Year Plan it is necessary to provide completely for the needs that the instructional process has for electronic-computer technology. It will be necessary to create approximately 130,000 work stations that are equipped with personal computers and terminals. There will be an expansion of the work to organize the network for shared use by several higher educational institutions and shared data banks, and to improve the information serving of the process of instruction and scientific research. The formation of programming centers for several higher educational institutions will be extended. A single collection of algorithms and programs for the higher school system will be organized, and steps will be taken to organize the printing and inclusion of packages of applied programs.

X. Improving the Administration of Higher and Secondary Special Education in the Country

A persistent requirement of the time is the improvement of the centralized management of the system of training, retraining, and refresher training for cadres in combination with the expansion of the democratic principles of administration, and the independence and creative initiative of the educational institutions.

It will be necessary to conduct the line aimed at the expansion of the rights and responsibility of the higher and secondary special educational institutions in all questions of instructing and educating young students, and scientific-training and economic-financial activities, including the regulation of the tables of organization for professor-instructor, administrative-management, and auxiliary-training personnel within the confines of the allocated appropriations and the total size of the staff. There will be an expansion of the opportunities for the higher educational institutions and technicums to form and use material incentive funds to provide incentives for their workers to achieve high results in organizing the scientific-training process. Steps will be taken to eliminate the petty regulations governing the actions of the educational institutions and to eliminate formalism and excessive paper work. There will be an increase in the responsibility borne by the academic councils at the higher educational institutions in resolving the questions of certifying scientific-pedagogical cadres.

There will be a reinforcement of the dean's offices at the university schools, which offices provide for the planning, organization, and management of the instructional process. There will be an increase in the role and responsibility of the departments for the quality of instruction and education of specialists, and their mastery of theoretical knowledge and professional skills. It will be considered to be one of the most important tasks of the specializing departments to maintain constant ties with their graduates and to take part in the raising of their proficiency level.

It will be necessary to increase considerably the role of USSR Ministry of Higher and Secondary Special Education in carrying out a single state policy in the field of specialist training and retraining, to concentrate its attention on the resolution of the cardinal questions of developing higher and secondary special education, to expand its rights, and to guarantee in full measure:

--the high quality and scientific substantiation of long-term forecasts and of long-range and current planning of higher and secondary special education, with a consideration of the tendency and developmental rates of our country's productive forces. On this basis there will be a deepening in the specialization of the higher educational institutions, expanded cooperation, and the elimination of unjustified duplication in the instruction of cadres, and a constant improvement of the list of specialties and the content of the education;

--the effective use of the integration of the higher school system with production and science in the interests of raising the level of instruction and the retraining of cadres and the success rate of the scientific developments. USSR Minvuz [Ministry of Higher and Secondary Special Education], within the confines of state plans, is to carry out the regulation of the scope of the specialist training and scientific research at higher educational institutions that are subordinate to various departments, with a consideration of the amount of funds allocated by the branches for these purposes;

--the increase in the effectiveness of the scientific-methodological guidance of higher and secondary special educational institutions in the country by means of the intensification of the influence exerted by USSR Ministry of Higher and Secondary Special Education upon the branch groups of educational institutions by way of the training-methodology associations in combination with the coordination of their work in the cities and economic rayons by way of regional centers of the higher school system.

It will be necessary to intensify the control functions of USSR Ministry of Higher and Secondary Special Education and the state inspections of the quality of instruction, and to introduce the certification of higher educational institutions. It will also be necessary to intensify the influence exerted by USSR Ministry of Higher and Secondary Special Education upon the selection and assignment of scientific-pedagogical and administrative cadres, expanding its rights in appointing and dismissing the rectors of higher educational institutions, irrespective of the departments to which they belong.

The organizing of the instruction-methodology associations of USSR Ministry of Higher and Secondary Special Education into groups of related specialties on the basis of the advanced higher educational institutions has been called upon to reinforce the creative tie with pedagogical and production collectives. This will promote the reflection in the educational processes of the latest achievements of science and technology, the vital interests of the appropriate branches of the national economy, the concentration of the scientists' efforts in the carrying out of the most important scientific-research projects in their field, and the improvement of the job of raising the proficiency level and retraining the instructors and specialists in the particular area of specialization.

The work of the regional centers of the higher school system must be based on the positive work experience that has been accumulated in the country at the councils of rectors of higher educational institutions. It would be desirable to give these centers the responsibility of summarizing and disseminating the advanced experience in the field of instructional and educational work, of analyzing the need and use of specialists, and of involving the scientists at the higher educational institutions in the resolution of problems of the region's comprehensive development. Provision will be made for creating there, for general use among several higher educational institutions, scientific-training subdivisions, computer centers, libraries, a printing base, experimental-production enterprises, repair-and-construction organizations, and institutions for providing medical, housing, municipal, cultural, and everyday services.

The periodic certification of higher educational institutions must promote the raising of the level of organization of the instructional and educational process. The results of that certification will be used to regulate the list and volumes of specialist training in the particular institution of higher learning, and the right will be granted to carry out the intensive instruction of the cadres with a prolonged period of instruction, as well as to raise the proficiency level of the instructors.

The branch ministries and department that have under their subordination higher and secondary special educational institutions must substantially raise the level and effectiveness of administering them and must completely guarantee the closest tie between instructional-educational and scientific-production work, overcoming at the same time the manifestations of a narrowly departmental pragmatic approach in instruction and in conducting scientific research.

The Councils of Ministers of the union republics must considerably improve their administration of higher and secondary special educational institutions with republic subordination. It will be necessary to develop interrepublic cooperative actions in specialist training, to channel the activities of the subordinate higher educational institutions and technicums toward the successful resolution of the tasks of providing cadre support for the republic and territorial national-economic complexes, and to unite the efforts of the republic's interested ministries and departments for reinforcing the instructional-laboratory base of the educational institutions.

The first-priority duty of all the agencies responsible for administering higher and secondary special educational institutions is, within the shortest periods of time, to ascertain the condition and activities of every higher educational institution, technicum, and school, to make a competent evaluation of its scientific-pedagogical potential, and its place and role in interaction with the interested branches, and to plan the specific measures that evolve from the tasks of restructuring the higher and secondary special school system.

It is necessary to improve the national-economic planning of specialist training, and to increase the responsibility borne by the ministries, departments, and enterprises for determining the need for cadres. It is necessary to stipulate in the state, republic, and branch plans for economic and social development the assignments for the training of specialists and scientific and scientific-pedagogical workers, and to raise their proficiency level and improve their retraining. USSR Gosplan and USSR Ministry of Higher and Secondary Special Education, jointly with the interested ministries and departments, are to work out long-term forecasts of the national economy's need for specialists, primarily in the priority sectors of scientific-technical progress, and to carry out the comprehensive cadres support of the most important state programs: the food program, the energy program, and the machine-building program; the chemicalization of the national economy, the development, production, and use of electronic-computer technology and automated systems; the development of the production of consumer goods and the services sphere; and other nationwide programs.

USSR State Committee for Labor and Social Problems is to intensify the state inspection of the use of specialists in the national economy, with the broad participation in this work of the agencies responsible for administering the higher and secondary special educational institutions. Active use will be made of levers of economic and public influence upon departments and enterprises that take a wasteful attitude toward the use of cadres.

It is necessary to increase the ties that the Soviet higher and secondary school system has with the educational institutions of the socialist countries as one of the important factors for reinforcing and expanding economic, scientific-technical, and cultural cooperation. Special attention must be devoted to the exchange of experience and the deepening of the interactions in the field of training highly trained cadres, the carrying out of joint scientific-research projects, and the educating of a new generation of specialists in the spirit of social progress, peace, and friendship among nations. It is important to intensify the cooperation with the higher educational institutions of the socialist countries for purposes of carrying out a well-coordinated scientific-technical policy, primarily in cadre support and in the implementation of the Comprehensive Program for the Scientific-Technical Progress of the CEMA Member Countries Until the Year 2000.

The Central Committee of the Communist Parties of the union republics and the party's kraykoms and obkoms are to improve the party administration of the educational institutions and to increase the role and responsibility of their primary party organizations in selecting and assigning the administrative and

scientific-pedagogical cadres and in creating in the collectives an atmosphere of high adherence to principles and genuine creativity. It is necessary to carry out the line aimed at increasing the party segment among the instructors, scientific associates, postgraduates, and young undergraduates. It will be necessary to keep under attentive daily party scrutiny the resolution of the cardinal questions of the work performed by the collectives at higher educational institutions and technicums; the improvement of the instructional-educational work, the increase in the effectiveness of scientific research, the reinforcement of the material-technical base, the raising of the level of proficiency of the scientific-pedagogical cadres, and the intensification of their responsibility for the quality of specialist training. It will be necessary to intensify the attention paid by the trade-union and Komsomol organizations and the soviet and economic agencies to the activities of the higher and secondary special educational institutions and the refresher-training and cadre training institutes and schools.

The development and improvement of public education is one of the most important trends in the creative work of the Communist Party and the Soviet state, and a strategic question in the cadre policy that was worked out by the January 1987 Plenum of the CPSU Central Committee.

In the process of restructuring it will be necessary to reinforce all that is the best in what has been achieved, and to solidify the fundamental bulwarks of the socialist system of vocational education. At the same time it is necessary to eliminate all obstacles on the path of its further development, to open up a broad vista for creativity and initiative, and to increase the contribution made by the higher and secondary special school system and the refresher-training and personnel retraining system to the development of Soviet society, the growth of its economic, scientific-technical, and cultural potential, and the reinforcement of our country's defensive capability.

The restructuring of the higher and secondary special school system must become a major measure of a nationwide scale. Taking into consideration the complete and broad nature of the measures being planned, it would be desirable to carry them out in stages. The restructuring should be carried out in close relationship with the resolution of the economic, social, and organizational-administrative tasks advanced by the 27th CPSU Congress.

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